



OUTLINE OF NEVADA MINING HISTORY

Joseph V. Tingley
Robert C. Horton
Francis C. Lincoln



TN
15
.N3
T564
1993

BLM Library
Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25047
Denver, CO 80225



U.S. DEPARTMENT OF THE INTERIOR



BUREAU OF LAND MANAGEMENT

Publication of this new edition of "Outline of Nevada Mining History" was made possible with the assistance of the U.S. Department of the Interior, Bureau of Land Management, which manages nearly 48 million acres of public land in Nevada. Most of the minerals, geothermal energy, and oil production in Nevada comes from public land.



First edition, first printing, 1000 copies
Printed by: DynaGraphics, Reno, NV

Reviewed by:

Tom Leshendok, U.S. Bureau of Land Management
Eric Moody, Nevada Historical Society
Jon Price, National Research Council

Design by: Jan Walker and Rayetta Buckley

Graphics by: Susan Tingley

Pen and ink sketches by: Larry Jacox

Typography by: Rayetta Buckley and Jan Walker

For sale by the Nevada Bureau of Mines and Geology, University of Nevada, Reno, NV 89557-0088

88076899

#29813640

TN
15
N3
T564
1993

OUTLINE OF NEVADA MINING HISTORY

Joseph V. Tingley
Robert C. Horton
Francis C. Lincoln

**Nevada Bureau
of Mines and Geology**

**SPECIAL PUBLICATION 15
1993**

Mackay School of Mines

**UNIVERSITY
OF NEVADA
RENO**

BLM Library
Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25047
Denver, CO 80225

CONTENTS

INTRODUCTION 3

AN OUTLINE OF THE MINING HISTORY OF THE STATE OF NEVADA, 1855–1923 11

by Francis Church Lincoln, 1924

- Reese River district 14
- White Pine district 14
- Trinity district 16
- Candelaria district 16
- First bullion production 16
- First railroads enter 18
- Early prosperity 18
- Period of decline 18
- Discovery of Tonopah 19
- Then came Goldfield 19
- Manhattan district 19
- More railroads built 21
- Copper production 21
- New discoveries 22
- War stimulates production 22
- Metals production 22

AN OUTLINE OF THE MINING HISTORY OF NEVADA, 1924–1964 25

by Robert C. Horton, 1964

- 1924–1934, profits and panic 25
- 1934–1944, the rise and fall of gold 27
- 1944–1954, between wars 29
- 1954–1964, and era ends - an era begins 31
- Industrial minerals 34
- The future 35

AN OUTLINE OF THE MINING HISTORY OF NEVADA, 1965–1992 37

by Joseph V. Tingley, 1993

- 1965–1979, copper to gold 37
- 1980–1989, the golden years 41
- 1990–and beyond 42

BIBLIOGRAPHY 44

INDEX 45

KEY TO NUMBERS ON PLATE 1 47

PLATE

- 1. Mining districts, oil fields, and geothermal plants in Nevada *inside back cover*

FIGURES

- 1. Discovery rate, Nevada mining districts/deposits, 1849–1992 4
- 2. Discovery rate, Nevada silver and gold, 1849–1992 5
- 3. Nevada mineral production, 1859–1992 6

TABLE

- 1. Nevada mineral production, 1859–1992 7



INTRODUCTION

This report summarizes Nevada mining history through 1992. The first two parts of the report, covering 1855 to 1964, were published as Report 7 by the Nevada Bureau of Mines and Geology in the Nevada Centennial year of 1964. The third section has been written specifically for this publication. The original text of Report 7 has been used with only minor changes, but all figures and plates have been replaced with new ones. Similar to Report 7, this updated version has been written mainly for the lay reader. No references are listed within the text, but many were used in its preparation. Production data used in figures 1-3 and listed in table 1 were extracted mainly from Minerals Yearbook volumes published by the U.S. Bureau of Mines, Minerals Resource volumes published by the U.S. Geological Survey, and from Mineral Industry reviews published annually by the Nevada Bureau of Mines and Geology since 1979. Historical information was compiled from Angel's (1881) *History of Nevada*, Davis's (1913) *History of Nevada*, Hulse's (1981) *The Nevada Adventure*, and Coope's (1991) *Carlin Trend Exploration History: Discovery of the Carlin Deposit*. In the text of all three sections of this report, names of specific mining districts are followed by numbers in brackets that refer to locations shown on plate 1. Some of the mining district names used in the first two sections of the report have changed with time; in these cases the text has not been changed but the present-day name is shown on plate 1.

Modern mining began in Nevada in 1849 with the discovery of placer gold in a little stream flowing into the Carson River near the present town of Dayton. This discovery, made by Mormon '49ers on their way

to the California gold fields, led others upstream into what was later known as the Virginia Range to find the croppings of the Comstock Lode in 1859.

Other mining activities, however, predated the Comstock discovery by many centuries. Deposits of obsidian, opalite, chalcedony, agate, jasper, and quartz occur throughout the state and were utilized by the earliest inhabitants, the American Indians, to fashion arrowheads, spearpoints, and various cutting and scraping tools. "Clovis points" found in Washoe Valley and near Tonopah, Beatty, and the Carson Sink are believed to have been made 10,000 or more years ago by these people. Much later, about 300 A.D. to 500 A.D., the Anasazi mined turquoise near Boulder City in present-day Clark County, and mined salt from deposits near St. Thomas, now covered by waters of Lake Mead in eastern Clark County. Evidence of Indian turquoise mining and processing was also found at Crescent Peak in southern Clark County. When this deposit was "discovered" by modern prospectors in 1889 or 1890 stone chisels, wedges, and hammers were found scattered at the site and a huge quantity of tiny turquoise fragments were found with rubbing and polishing stones in what must have been a lapidary shop. This site is reported to have been worked and abandoned about 1200 A.D. Many of the discovery "legends" of Nevada's mining districts, including those of Pahranaagat [330] and Pioche [347] in Lincoln County, and Robinson [378] and White Pine [512] in White Pine County, tell of prospectors being led to the areas by an Indian guide. This would seem to indicate that the Indians knew of the metal deposits and perhaps made some use of the materials found in the outcrops.

Figure 1
DISCOVERY RATE, NEVADA MINING DISTRICTS/DEPOSITS
1849 - 1992
(Number per year)

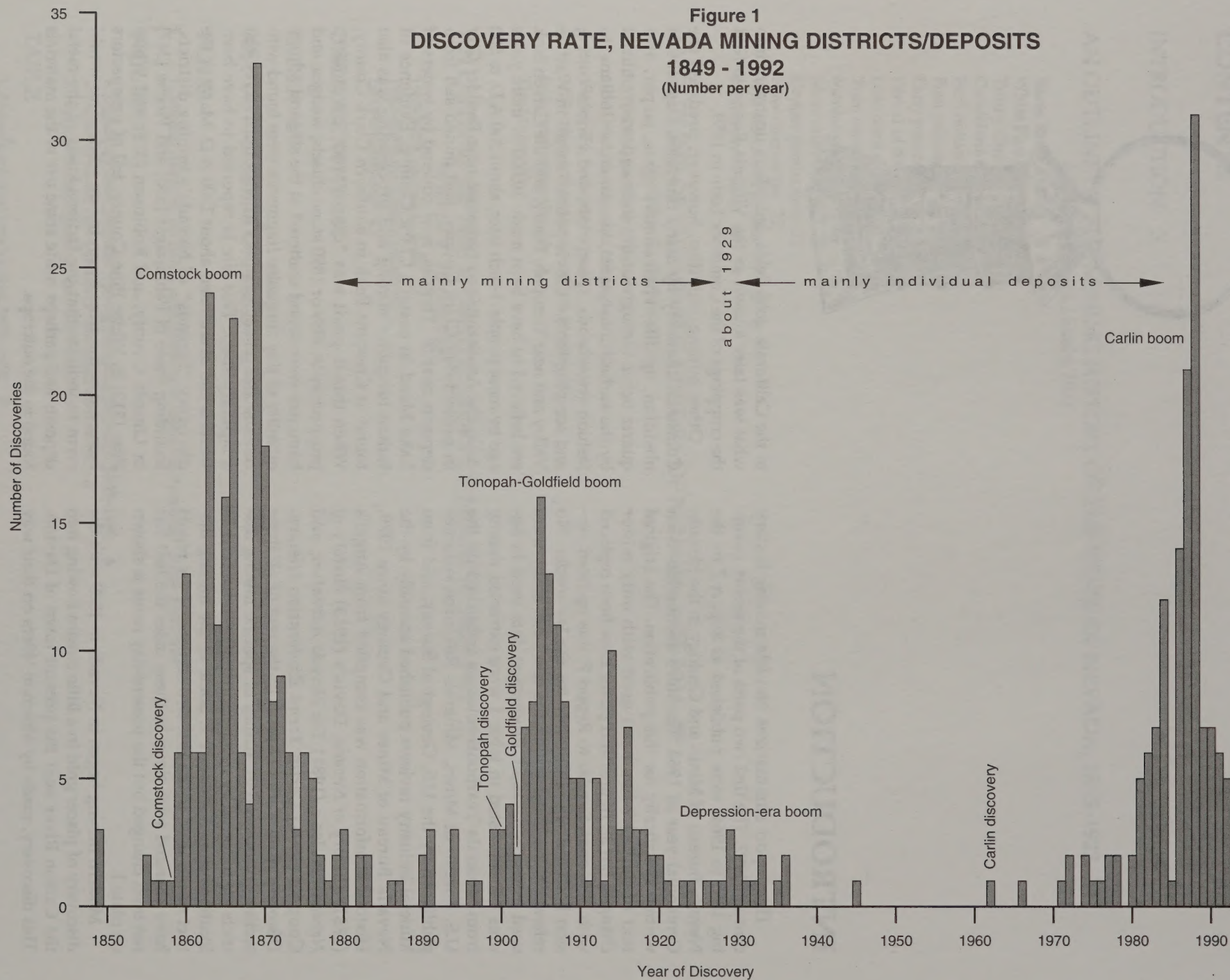
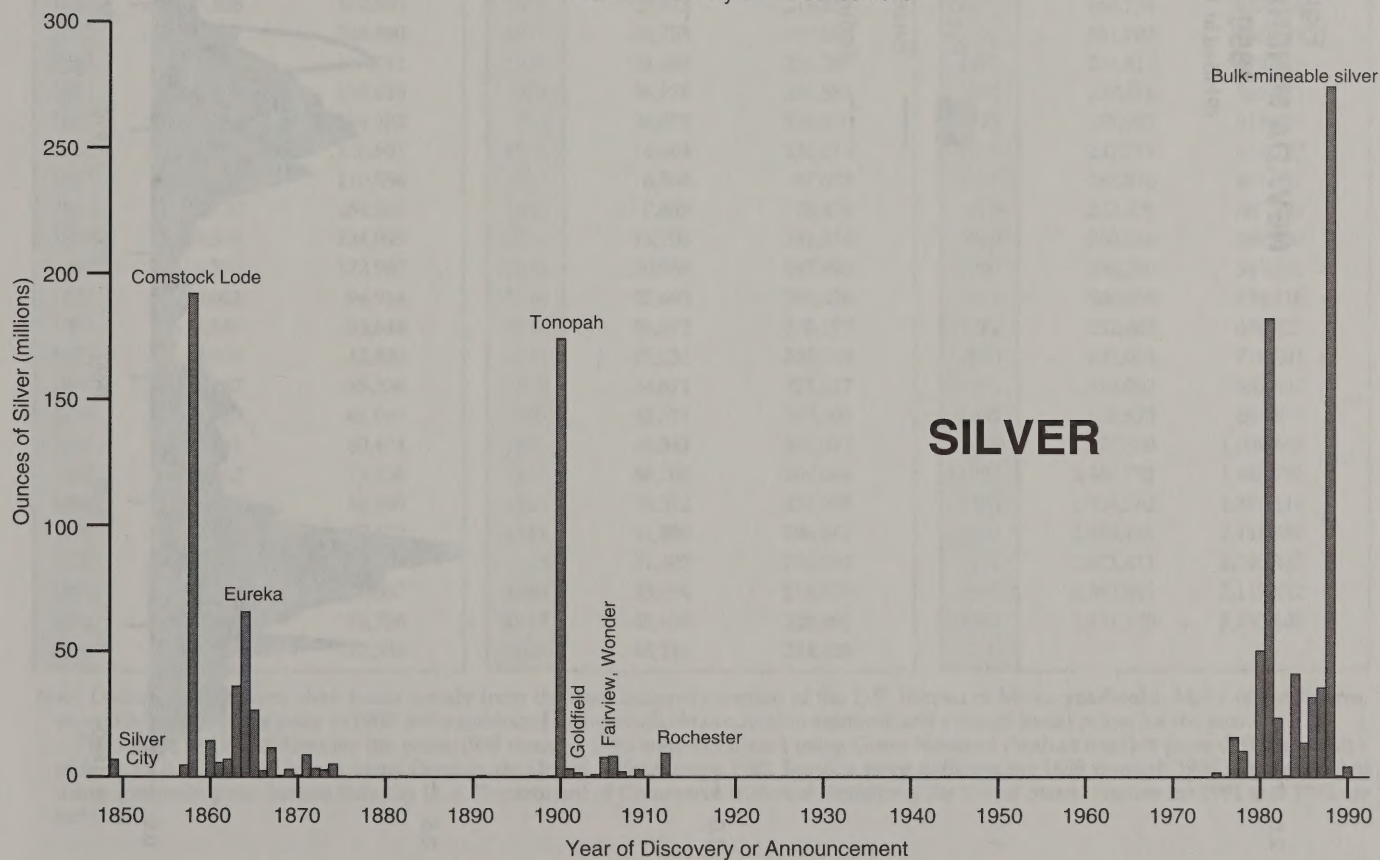
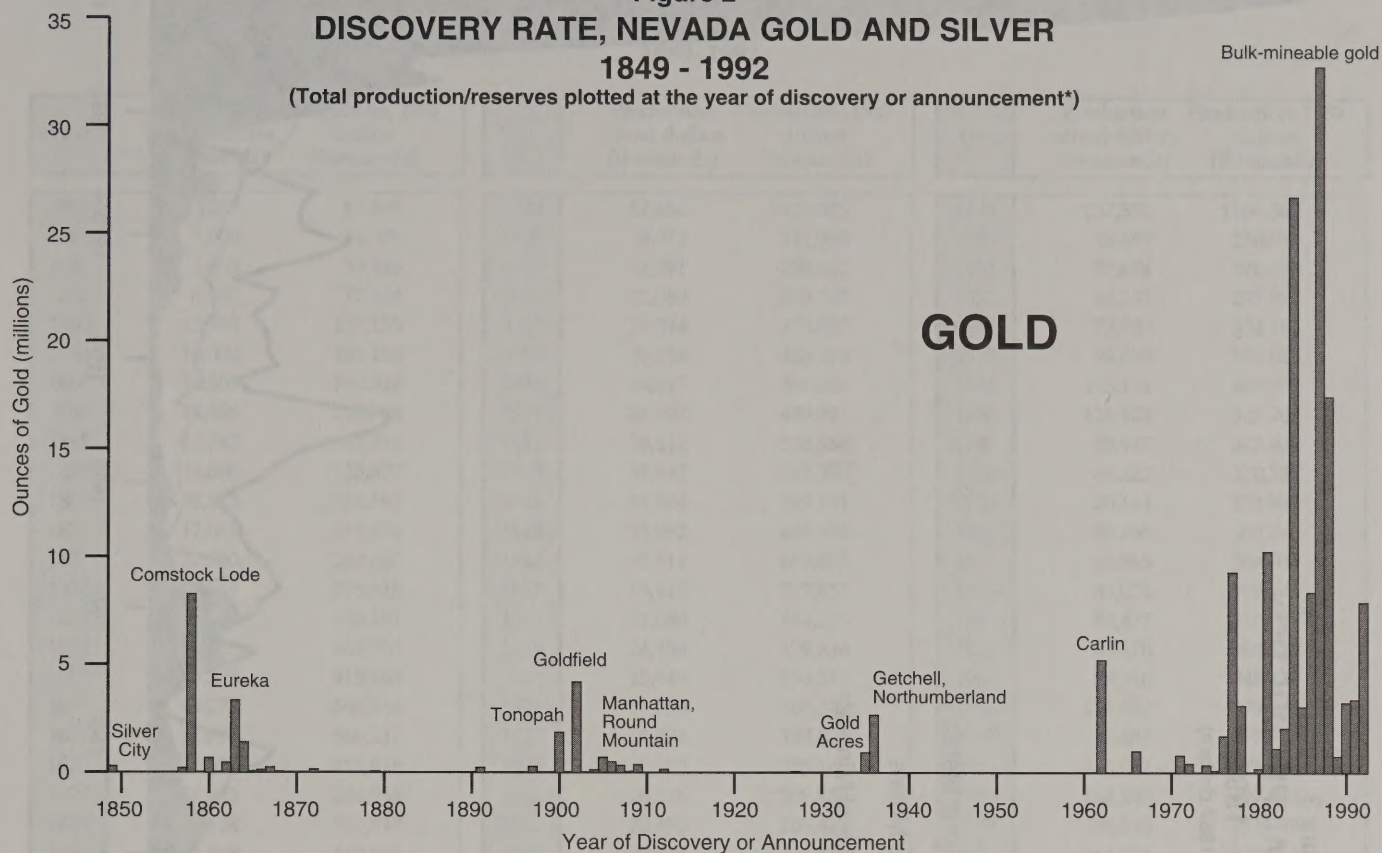


Figure 2
DISCOVERY RATE, NEVADA GOLD AND SILVER
1849 - 1992
 (Total production/reserves plotted at the year of discovery or announcement*)



*Reactivated production/reserves shown separately from original.

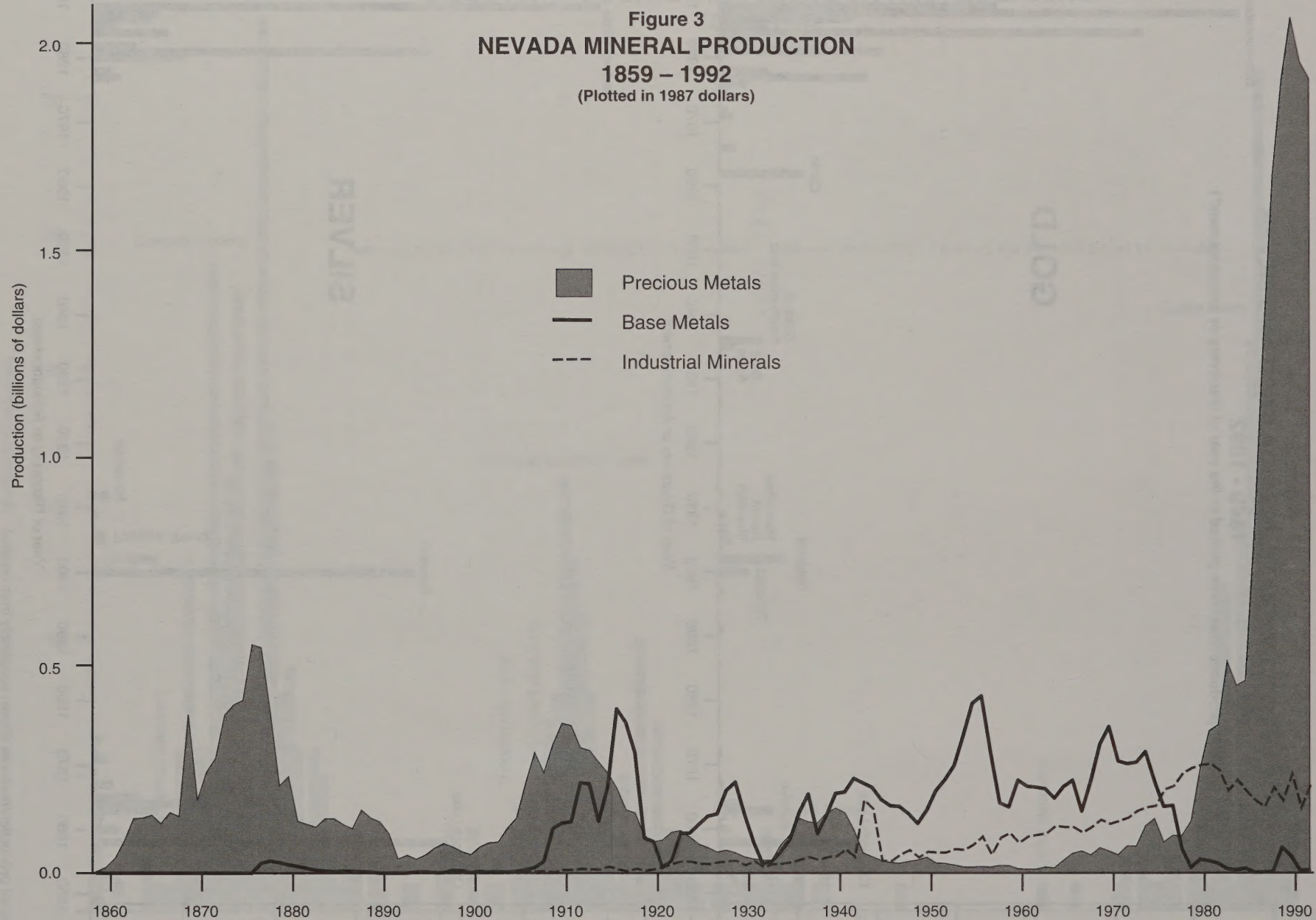


Table 1

NEVADA MINERAL PRODUCTION 1859-1992

Year	Production actual dollars (thousands)	Production, 1987 dollars (thousands)	Year	Production actual dollars (thousands)	Production, 1987 dollars (thousands)	Year	Production actual dollars (thousands)	Production, 1987 dollars (thousands)
1859	\$257	\$3,695	1904	\$7,654	\$110,059	1949	\$37,372	\$186,860
1860	1,000	14,379	1905	9,873	141,965	1950	48,499	238,911
1861	2,500	35,946	1906	15,991	229,922	1951	57,674	270,770
1862	6,000	77,644	1907	22,089	306,260	1952	64,231	295,995
1863	12,500	131,155	1908	19,044	273,822	1953	73,523	334,195
1864	16,000	132,160	1909	29,269	418,126	1954	89,098	399,543
1865	16,508	139,318	1910	34,617	487,565	1955	113,121	489,701
1866	13,455	118,714	1911	34,502	485,941	1956	126,122	527,707
1867	15,742	145,513	1912	39,112	528,538	1957	85,947	347,964
1868	14,000	135,877	1913	37,842	518,385	1958	68,222	270,722
1869	39,273	381,161	1914	29,984	399,791	1959	70,164	271,953
1870	17,088	174,574	1915	35,992	461,435	1960	80,285	305,266
1871	22,500	242,637	1916	53,511	608,075	1961	80,565	304,019
1872	25,549	275,515	1917	55,410	517,852	1962	83,074	306,546
1873	35,255	380,181	1918	51,080	444,175	1963	85,477	310,825
1874	35,452	404,802	1919	24,458	179,836	1964	85,170	304,179
1875	35,290	415,164	1920	25,649	159,310	1965	99,916	348,139
1876	45,273	549,244	1921	14,038	106,349	1966	112,637	379,249
1877	46,672	566,217	1922	18,374	150,607	1967	90,883	297,977
1878	30,920	413,918	1923	28,599	225,186	1968	120,041	375,128
1879	16,943	234,918	1924	26,226	209,808	1969	168,295	497,914
1880	18,818	251,917	1925	26,470	208,424	1970	186,345	521,975
1881	10,528	140,943	1926	27,613	219,153	1971	164,774	437,066
1882	9,627	128,880	1927	26,753	217,506	1972	181,702	460,005
1883	8,470	117,441	1928	34,882	281,305	1973	201,813	479,366
1884	9,432	135,618	1929	36,776	296,583	1974	257,876	561,821
1885	9,353	134,482	1930	24,075	198,970	1975	257,997	511,899
1886	8,402	120,801	1931	14,964	136,034	1976	232,719	434,177
1887	7,689	110,556	1932	6,568	67,023	1977	263,816	461,217
1888	10,750	154,562	1933	7,455	78,479	1978	237,409	387,290
1889	9,389	134,995	1934	14,703	141,374	1979	260,246	389,590
1890	8,554	122,987	1935	20,988	197,998	1980	394,230	541,525
1891	6,601	94,914	1936	32,693	308,426	1981	506,659	634,116
1892	2,340	33,644	1937	38,872	350,197	1982	532,463	626,427
1893	2,979	42,839	1938	27,031	245,739	1983	632,494	716,301
1894	2,367	35,338	1939	34,671	321,027	1984	624,062	682,035
1895	2,959	45,949	1940	42,571	387,005	1985	630,973	669,823
1896	3,891	60,424	1941	46,341	396,077	1986	977,350	1,009,659
1897	4,632	71,936	1942	46,208	369,664	1987	1,446,791	1,446,791
1898	4,441	68,969	1943	56,312	439,938	1988	1,954,382	1,890,118
1899	3,698	57,420	1944	51,800	398,462	1989	2,310,161	2,147,389
1900	2,916	45,279	1945	31,307	235,391	1990	2,621,411	2,340,337
1901	4,319	67,067	1946	35,454	214,873	1991	2,392,901	2,117,612
1902	5,005	74,726	1947	42,639	226,803	1992	2,431,173	2,132,608
1903	5,377	77,309	1948	45,110	224,428			

Note: Dollar values shown were taken mainly from the state summary section of the U.S. Bureau of Mines yearbooks. Many of the figures, especially for the years prior to 1900, were estimated using available production amounts and average metal prices for the year.

The values in 1987 dollars for the years 1909 through 1990 were calculated using Gross National Product implicit price deflators from a table in U. S. Bureau of Mines *Metal Prices in the United States through 1991*. Implicit price deflators for 1859 through 1908 were estimated using consumer price indices listed in U. S. Department of Commerce *Historical Statistics of the United States*. Figures for 1991 and 1992 are estimated.

Spanish mining in southern Nevada may be more myth than fact, but the Spanish Trail, established between Santa Fe and Los Angeles, crossed the border of the present state near Bunkerville on the Virgin River and passed through Las Vegas. Survivors of Cabeza de Vaca's exploring party may have passed along this route between 1527 and 1537, but accounts make no mention of mineral discoveries. Much later, around 1770, a Spanish exploring party is said to have been sent by the Franciscan missionary Father Junipero Serra to mine placer gold, turquoise, and silver deposits in Clark County. This account is generally discredited, however, and most historians do not place Spanish exploring parties in the state until 1776 when another missionary, Father Francisco Garcés, may have crossed the southern tip of Nevada.

There are accounts, again possibly fictional, of Mexican miners recovering placer gold from deposits in the Tule Canyon district [475] in Esmeralda County prior to 1848. A few years later, in the spring of 1856, lead deposits were found by Mormons in the southern Spring Mountains west of the old Las Vegas Mormon Mission. The discoveries, at the North Mines in what was later known as the Charleston district [87], and the Potosi mine in the present-day Goodsprings district [202], provided lead for use by Mormon settlers as far away as Salt Lake City, Utah. Ore from the mines was hauled to Las Vegas where it was smelted in a crude furnace said to be the first "smelter" built and operated west of the Missouri River.

The three parts of this report follow Nevada mining history from the time of hand-dug turquoise and salt mines through the Comstock era of deep underground silver mines to the Carlin era of huge bulk-mineable gold and silver mines. Nevada mining activity throughout the 143-year time span between 1849 and 1992 falls into four major periods (fig. 1). Most of Nevada's mining districts were discovered during the first two, the Comstock boom and the Tonopah-Goldfield boom. These booms began with a major discovery, the Comstock [103] in 1859, and Tonopah [467] in 1900, and Goldfield [199] in 1902, each of which then set off a flurry of discoveries of less magnitude in nearby areas. Figure 1 shows that only a few other districts (none with Comstock and only two with Tonopah) were discovered during the same year as the "starring" discovery of the two booms. Figure 2, however, shows that the "stars" contained the bulk of the resulting silver and gold production; the best seems to have been found first. Both discovery booms peaked within 5 to 10 years and both were over within 20 years of the first discovery.

The third mining period, much smaller than the first two, was a depression-era boom set off by an

increase in the price of gold in 1933. Important gold discoveries made during this time, however, included the Standard mine in Pershing County, the Getchell mine in Humboldt County, the Northumberland mine in Nye County, and the Gold Acres mine in Lander County. These were all occurrences of "invisible gold," and were the first to be found and mined in the state of what later was to be called the Carlin type deposit. W. O. Vanderburg, a mining engineer with the U.S. Bureau of Mines who was working in Nevada at that time, observed that this type of deposit would have been passed over by the early prospectors who depended largely on panning; the gold was too fine grained to be seen and would not concentrate in a gold pan. Vanderburg predicted that similar deposits remained to be discovered in other areas of the state. The significance of his remarks, however, was not recognized at this time.

The last period described in this report, the present-day Carlin boom, began with the discovery of the Carlin gold deposit in 1962. Although the boom appears to have peaked about 1988, this period is still open. This period and the previous depression-era period are measured by discoveries of individual deposits rather than entire mining districts and, for the most part, the discoveries have been made in old, established districts. Most of these new deposits, however, are large enough alone to match production and reserves with the entire production of many of the historic districts.

The Carlin discovery was one of the most significant events of this time and may be second only to the discovery of the Comstock in importance to Nevada mining. The occurrence of "invisible gold," so named because of its very small grain size, in a large, bulk-mineable deposit caught industry's attention and set in motion Nevada's third great prospecting rush. A few gold deposits of this type, Standard, Getchell, Gold Acres, and Northumberland, had been found in the mini-rush of the late 1930s but it took the discovery of Carlin to impress the industry with their significance. The second of this new wave of invisible gold discoveries, the Cortez deposit in Lander County, was made in 1967, and other discoveries followed in White Pine, Elko, Eureka, and Humboldt Counties. The Carlin trend, a belt extending northwest and southeast from the original discovery, now contains more than 20 mines and is one of the major gold-producing regions of the world. Nevada gold production skyrocketed during this time and, in dollar value, eclipsed that of all other commodities produced in the state. The values of precious metal, base metal, and industrial mineral production in Nevada, 1859 to 1992, are shown in figure 3. This figure shows values adjusted to 1987 dollars to take into account the

changing value of the dollar over the time span. Total annual production figures, both actual values and values adjusted to 1987 dollars, are listed in table 1.

Francis Church Lincoln's account of Nevada mining history through 1923 was written in 1924. Lincoln was Director of the Mackay School of Mines from 1914 to 1924 and wrote numerous articles on Nevada mining. One of his articles, originally printed in the Nevada News Letter and Advertiser in 1924, described the history of Nevada mining from its inception to 1924. This article formed the first part of Nevada Bureau of Mines Report 7, *Outline of Nevada Mining History*, issued in 1964, and is again used as the first section of this report. To maintain the interesting historical perspective of his writing, Lincoln's section is presented as it was originally published with no changes except for the correction of a few typographical errors; the "present" time in this section is 1924. Lincoln's section describes American Indian mining activity in Clark County, mentions rumors of Spanish mines in the same area, then summarizes the frenzy of precious metals prospecting and mining generated by discovery of the Comstock Lode in 1859. Precious metals dominated the time, but important deposits of lead, zinc, copper, tungsten, and iron also were found during this period. In his section, Lincoln described two boom-bust cycles: first the Comstock production era covering roughly 1861 to 1889, then the Tonopah-Goldfield period beginning about 1901. A production peak in base metals during World War I followed by a post-war crash in 1919 ended Lincoln's section at what he saw as a second major period of decline in the state's mineral industry.

Robert C. Horton reviewed Nevada mining between 1924 and 1964. Horton was a mining engineer with the Nevada Bureau of Mines in 1964 and served as Associate Director 1965 to 1967. In 1981 he became Director of the U.S. Bureau of Mines and held that position until 1987 when he returned to Reno to become Director of the Center for Strategic Materials Research and Policy Study between September 1987 and July 1990. Horton also served as Associate Dean of the Mackay School of Mines in 1989 and 1990. During the Nevada Centennial year of 1964, Horton prepared an outline of Nevada mining history, 1924 to 1964, to complement Lincoln's earlier work and published the two together as Nevada Bureau of Mines Report 7. Horton's section is included in its original form with only minor typographical corrections; in Horton's section, the "present" is 1964. Horton described a mineral industry dominated by base metal production. Nevada's precious metals industry continued to decline from 1924 through the depression years and, except for a slight period of recovery inspired by a Government-mandated gold price

increase in 1933, slowly sank to a near-record low in 1961. Since the start of the Comstock boom, only 1894 recorded less production of gold and silver than 1961. A long period of war-driven economy followed by post-war industrial expansion provided incentive for production of base metals, however, and Nevada produced significant amounts of copper, lead, zinc, iron, and tungsten from 1924 through 1964. The 1924 to 1964 era saw the start of Nevada's petroleum production. Industrial minerals, which over the years had been reporting only a few millions of dollars in annual production, also began a steep rise in importance.

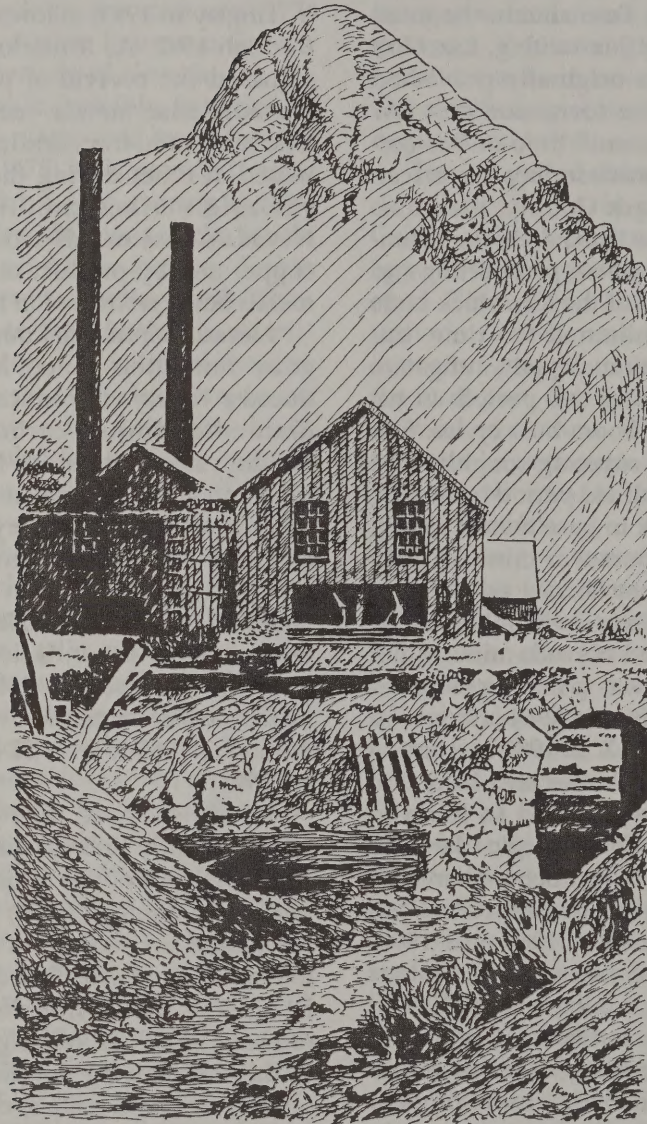
The final section of this report, written by Joseph V. Tingley in 1993, follows Nevada mining from 1965 through 1992. As if marking a turn of fortune, 1965 signaled the revival of precious metals mining in Nevada. Base metals—copper, molybdenum, lead, zinc, tungsten, iron, and mercury—were sought and mined at times during the period 1965 to 1992, but variable market conditions all but eliminated Nevada's base metals industry. At the close of 1992, copper and by-product mercury were the only base metals being recovered in the state.

Nevada's industrial mineral industry continued to grow during this period, however, and the state produced a variety of products including barite, gypsum, diatomite, lithium carbonate, magnesite, perlite, building stone, limestone for cement production, and sand and gravel. Petroleum production also expanded greatly with the discovery of several new oil fields, and geothermal power generation commenced at several geothermal areas in the state. These developments added greatly to Nevada's mineral output, but gold and silver continued to provide the greatest return to the state. In dollar value, annual precious metals output increased over 200 times, from about \$9 million in 1965 to over \$2 billion each year from 1989 to 1992.

What lies ahead for Nevada's mineral industry? Nevada's early history, the time described by Lincoln in the first part of this outline, is largely a history of its mines and mining camps; mineral discoveries created the reason for settlement and agriculture and other industries were established to serve the mining population. This period was dominated by the production of precious metals. Mining continued to be important to the state during the period described by Horton, but various base metals, copper, lead, zinc, mercury, tungsten, and iron, replaced precious metals in importance. Mining of these commodities provided economic stimulus to outlying communities such as Ely, Yerington, Winnemucca, Lovelock, Mountain City, and Pioche. Other factors, mainly gaming and tourism, took over as the driving forces behind Nevada's economy during this time, however, and

the state's population growth concentrated in Reno and Las Vegas, both remote from mining centers. In 1993, metal mining, mainly gold and silver, continues to dominate Nevada's mineral industry. However, industrial minerals, such as sand and gravel, and limestone for cement, are showing growth related to

population expansion in the urban Las Vegas and Reno areas. It appears, therefore, that the situation may now be the reverse of Comstock times; we will see mines developed to serve the new urban population of the state rather than population and services developed to serve the mines.



AN OUTLINE OF THE MINING HISTORY OF THE STATE OF NEVADA (1855-1923)

Written in 1924 by
Francis Church Lincoln

Mining has been the paramount industry of Nevada. Her population has ebbed and flowed in sympathy with her bullion production. Railroads have been built to serve Nevada mines, and mills and smelters erected to treat their products. Vast stores of treasure have been produced from mining districts scattered over the entire state. Every county has had its big mines, and some counties have been named after mining camps, while others have been organized or had their boundaries altered to accommodate mining districts. The mining industry of Nevada has not only held this dominant position in the history of the state, but has also frequently proved of great national moment.

Mining operations in Nevada were conducted on a small scale by the Indians and by the Franciscan Fathers prior to the advent of the argonauts. With the coming of the pioneers, important mining activities were inaugurated; and the mining industry of Nevada has since passed through two great cycles. At the opening of each cycle, there was a period during which many new mines were discovered and rushes to the discoveries took place. This was succeeded, in each case, by a period in which few new mines were found although mining prosperity, measured by pro-

duction, continued and increased. Then followed a period of decline during which production fell, ending in a period of depression with the mining industry dormant. These cycles and periods with their approximate dates are shown in the following table:

<u>Cycle</u>	<u>Period</u>	<u>Date</u>
Early	Discovery	1849-1868
	Prosperity	1869-1880
	Decline	1881-1891
	Depression	1892-1899
Late	Discovery	1900-1907
	Prosperity	1908-1918
	Decline	1919

The first mining operations within the area which now constitutes Nevada were those conducted by the Indians prior to the advent of the white man.

An interesting example of this aboriginal mining occurs in the Crescent District [113] in Clark County. Prehistoric workings with stone hammers scattered about them were found at the Wood turquoise mine and served as a guide to modern exploration. Indian relics have also been found in the salt mines of southern Nevada.

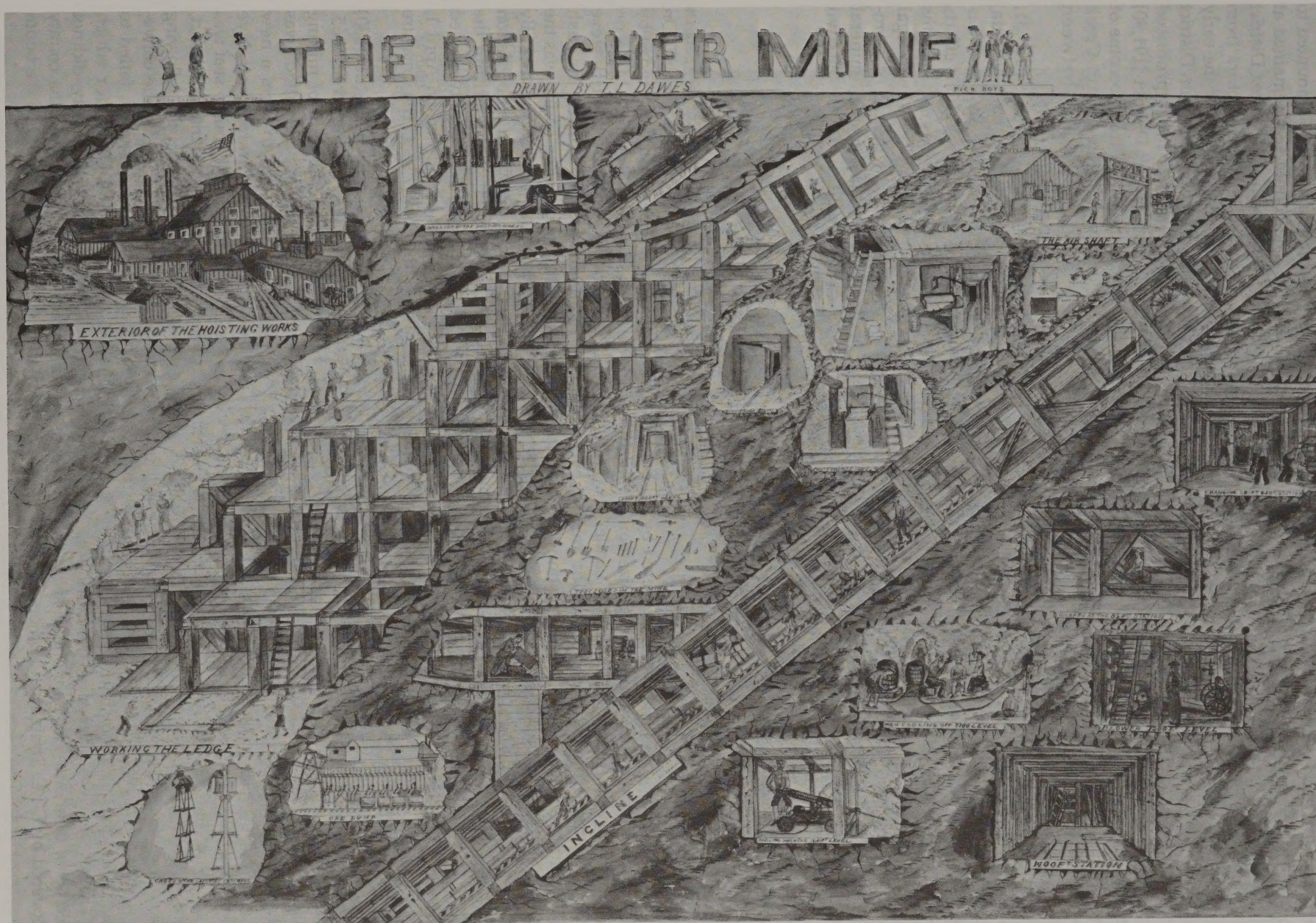


The first white man to set foot on Nevada soil was probably Francisco Garces, of the order of St. Francis, who appears to have entered southern Nevada in February, 1776. The Franciscan monks later established a winding route known as the "old Spanish trail" from Los Angeles, California, through Las Vegas, Nevada, to Santa Fe, New Mexico. With the assistance of their Mexican converts, the Franciscan Fathers worked gold placer mines, silver lode mines, and turquoise deposits in what is now Clark County, Nevada; and left interesting relics in some of the mines.

Nevada was made a part of the United States by the treaty with Mexico signed February 2, 1848. On March 18, 1849, the Mormon "State of Deseret" was organized to include Nevada and all the other ceded Mexican territory with the exception of California; and soon afterward a Mormon company was formed to visit the recently discovered placer gold mines of California. H. S. Beatie was secretary of this company, and he with several others remained in the Carson Valley, built the first house in Nevada on the present site of Genoa, and opened a trading post. Placer gold was discovered by Abner Blackburn, a member of Beatie's party, at the mouth of Gold Canyon near the present site of Dayton in July, 1849, on his return from a trip to the California gold mines. The discovery was not rich enough to occasion excitement, but on his next trip to California, Blackburn told the Mormon company about it. Some of these Mormons together with other immigrants on their way to California worked the gravels of Gold Canyon, and the little placer mining camp of Johnstown grew up there, but it was many years before the source of this gold in the Comstock Lode [103] was discovered. The Mormon territory of Deseret was never recognized by the United States, and on September 9th, 1850, the Territory of Utah, including Nevada, was established. At about this same time, the Mormons began to make extensive use of the old Spanish trail through Las Vegas, Nevada, into southern California; and in 1855, a party of Mormons returning over this trail from San Bernardino discovered the Potosi Mine in what is now the Yellow Pine District [202] of Clark County. Thus the first of the modern placer mines and the first of the modern lode mines in Nevada were discovered by the Mormons. Slade was appointed superintendent of the Potosi Mine by the church authorities, and an attempt was made to smelt the lead ore at the mine. When this proved unsuccessful, the ore was carried to the Las Vegas way station where Dudd Leavitt and Isaac Grundy built a furnace in a fireplace. Crude smelting operations were successfully carried on in this improvised furnace, and five tons of lead were produced, thus inaugurating lead smelting in Nevada.

The placer miners of Johnstown worked slowly up Gold Canyon and the neighboring Six-Mile Canyon and reached the Comstock Lode in 1859. In January 29th of that year, James Fennimore, familiarly known as "Old Virginia" and who afterwards named Virginia City, together with several others who had worked up Gold Canyon, located the Gold Hill croppings of the Comstock Lode as placer ground and began to work them; while on June 10, 1859, Peter O'Riley and Patrick McLaughlin, who had worked up Six-Mile Canyon, dug into the croppings of the Ophir bonanza and located it as a lode, giving H. T. P. Comstock for whom the lode was named a place on their original location notice. Outside interest was not aroused until Melville Atwood of Grass Valley, California, assayed the heavy black mineral which was annoying the Gold Hill and Ophir miners by clogging their sluices, and proved it to be silver sulphide. The first silver mine in the United States had been discovered, and when the news spread to California it aroused unbounded excitement and precipitated the great Washoe rush. Hundreds crossed the mountains late in 1859, to be followed by thousands the next year. Some 20,000 people went to Virginia City on the Comstock Lode and 10,000 of them remained. Nor did all who left return to their homes, for many sought for new deposits in other parts of Nevada or joined in rushes to new camps. The population thus brought into the region made it possible for Abraham Lincoln to admit Nevada as a state in 1864; and the enormous bullion production of the Comstock Lode helped materially to bring the Civil War to a successful conclusion. The Nevada or square set system of mine timbering was invented by Philip Deidesheimer at the Ophir mine on the Comstock Lode in 1860. The Mexican patio process was first employed for the treatment of the Comstock ores, from which the Washoe pan amalgamation was evolved, the first mill to use this process being erected by A. B. Paul in 1860. Eighty mills were in operation by 1862, and the bullion production of that year reached \$7,000,000. It remained above that figure until 1880, the maximum annual production of \$36,301,537 coming in 1877. The total recorded production of the Comstock District from 1859 to 1921 is \$386,346,931.

The Esmeralda District [24], which gave its name to Esmeralda County, but is now in Mineral County, was discovered on August 25, 1860, by Hicks, Corey, and Braley. Fortune hunters from the outside began to arrive late in September and continued to come all winter. The town of Aurora was founded and its population rose to 5,000 in 1862. About \$30,000,000 in bullion was produced by this district up to 1869; and \$1,974,290 was produced from 1910 to 1920. It was also in the year 1860 that ore was discovered in the



The Belcher mine, Virginia City. Photo of a water color by T. L. Dawes.

northern part of the Humboldt Range and the Humboldt District [224] organized. The Star [444] and Buena Vista [62] Districts in the same region were organized the following year, and in 1862 the Humboldt rush took place.

The census of 1860 gave Nevada a population of 6,587; and it was estimated that in 1861 the population had increased to about 17,000. On March 2, 1861, the Territory of Nevada was established; and on March 22, James W. Nye was commissioned Governor of Nevada. The first legislature passed an act approved November 25, 1861, dividing Nevada into the nine following counties: Churchill, Douglas, Esmeralda, Humboldt, Lake (changed to Roop, December 5, 1862, and attached to Washoe, February 16, 1864), Lyon, Ormsby, Storey and Washoe. Telegraphic connection was established between Virginia City and Placerville in 1869. During 1861, Virginia City was connected with Salt Lake City by telegraph and good toll roads were constructed over the Placerville route to California. The first stock exchange on the Pacific coast was organized in San Francisco on September 1, 1862, under the name of the San Francisco Stock and Exchange Board, and dealt largely in Nevada stocks.

REESE RIVER DISTRICT

The Reese River District [372] was discovered by William Talcott on May 2, 1862, and was organized on May 10. A rush ensued. Austin was built, and Lander County was formed from parts of Humboldt and Churchill Counties on December 19, 1862. Austin was made the county seat the following year. It was found that the ores of the Reese River District could not be treated by the Washoe Process of pan amalgamation used on the Comstock, and the Reese River Process was evolved by which ores were subjected to a chloridizing roast before being treated by pan amalgamation. The early production amounted to some \$50,000,000, but from 1902 to 1920 the camp only produced \$262,957. Prospectors working southward from the Reese River District discovered many other precious metal districts. P. A. Haven discovered silver ore in the Shoshone Range in 1863, and the Union District [482] was organized and the town of Ione built that same year. The district was supposed to contain many rich mines, and upon petition of the miners, Nye County, named after Governor Nye, was cut off from Esmeralda County on February 16, 1864, and Ione made the county seat. The district failed to meet the high expectations of its founders, and in 1867 the county seat was moved to the more prosperous camp of Belmont. The Belmont District [36] was discovered by C. L. Straight and others in 1865.

The production of this camp up to 1885 amounted to more than \$15,000,000. The county seat remained at Belmont until the Tonopah boom. The Cortez District [111] was discovered in 1863 by prospectors from Austin, and produced about \$15,000,000 in the early days. The Silver Peak [422] and Red Mountain District [369] was also discovered in 1863. It has produced about \$8,500,000. The Cherry Creek District [191,90] was organized in 1863, although it did not become of importance until the discovery of the Cherry Creek mines in 1872. The district produced between \$6,000,000 and \$22,000,000 in the early days.

Nevada was admitted as a state on October 31, 1864. Hon. William M. Stewart, Senator from Nevada, drafted the first federal mining legislation known as the Act of 1866; and it was mainly through his efforts that this act which recognized the rules and customs of miners and provided a means of securing a legal title to mining land became the law instead of a proposed measure which would have sold all mineral lands to pay off the national debt created by the Civil War.

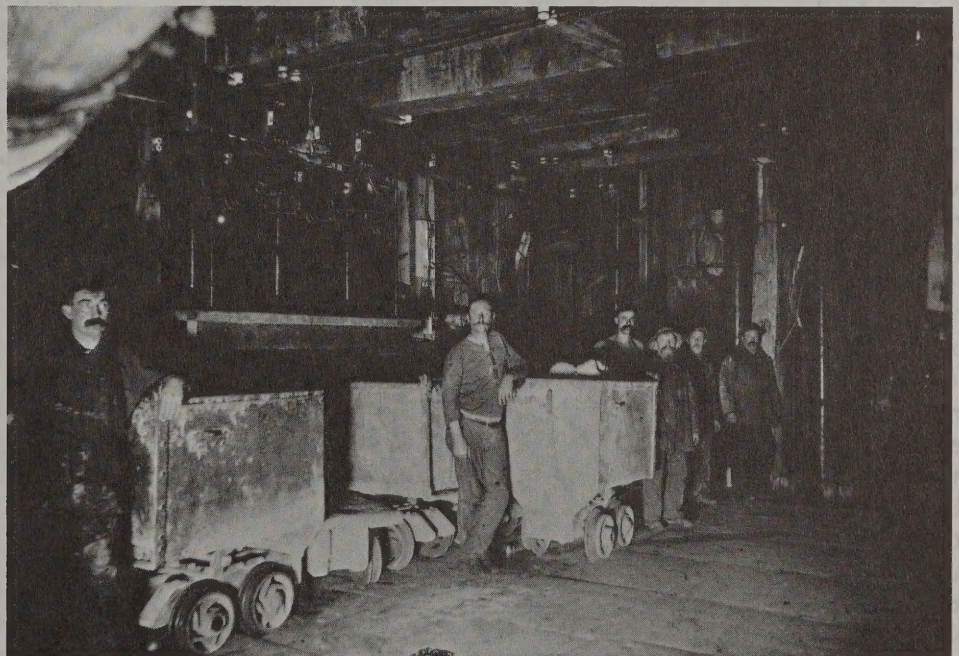
WHITE PINE DISTRICT

The White Pine District [512] was organized in 1865, but did not come into prominence till 1867. On September 14 of that year, Albert Leathers, guided by an Indian, located the Hidden Treasure Mine on Treasure Hill. The ores of Treasure Hill were extremely rich in silver, and the White Pine rush which reached its height the following spring was the greatest since the Washoe rush to the Comstock. By 1869, Hamilton, the principal town, had a population of 10,000; and there was 25,000 people within the boundaries of the district. White Pine County, named from the mining district, was established on April 1, 1869, with Hamilton as the county seat. The Treasure Hill mines produced \$22,000,000 up to 1887.

Ore was discovered in the Pahrnagat District [330] about 1864 and the district was organized in 1865. W. H. Raymond bought a large amount of mining land there for eastern capitalists, and the outlook was so promising that it was decided to form a new county. Lincoln County was separated from Nye County on February 26, 1866, and the county seat was located at Crystal Springs in the Pahrnagat District, but moved to Hiko in the same district the following year. Just as the Union District [482], for the convenience of which Nye County was formed, failed to make good; so the Pahrnagat District, for which Lincoln County was taken from Nye County, did not become an important mining center; and the county seat moved to Pioche in 1871 as a result of the boom



Virginia City: (above)
Gould & Curry works,
Mt. Davidson in back-
ground, (right) shaft
station in one of the
deep mines, probably in
the early 1880s.



in that district. The Pioche District [347] was shown to William Hamblin, a Mormon missionary to the Indians, by Pahute Indians in 1863, and was organized as the Meadow Valley District in 1864. Little was done until 1868, however, when F. L. A. Pioche, after whom the town of Pioche is named, sent C. E. Hoffman to purchase claims in the district which were afterwards conveyed to the Meadow Valley Mining Company. In 1869, W. H. Raymond and J. H. Ely, who had been unsuccessfully operating a 5-stamp mill in the Pahranaagat District, purchased a mine at Pioche and brought up their mill from Hiko to Bullionville, near Pioche to treat the ores. This mill proved an immediate success, the Raymond and Ely Mining Company became the rival of the Meadow Valley Mining Company, and the Pioche District boomed. The boom reached its height in 1872 when the estimated population of Pioche was 6,000; and more than \$15,000,000 in bullion was produced by the camp up to 1875. The district experienced a revival in 1905, and from 1905 to 1921 produced metals to the value of \$9,739,323.

TRINITY DISTRICT

The Trinity District [472] in Humboldt County, discovered by George Lovelock in 1859, was organized in 1863 and a smelter was built at Oreana to treat its ores in 1867. This was the first smelting plant to be erected in Nevada, if we except the little Mormon furnace at Las Vegas; and it vies with the smelter at Argenta, Montana, for the honor of being the first, silver-lead smelter in the United States; - Argenta having produced lead for local consumption a little earlier, but Oreana being the first to send lead to the outside market. Up to 1875, its richest mine, the Montezuma, had produced 3,150 tons of lead and \$445,000 in silver. The Eureka District [161] was discovered on September 19, 1864, by a party of prospectors from Austin, but did not become of importance till 1869 when Col. G. C. Robbins demonstrated that its silver-lead ores could be successfully smelted. The Arentz siphon tap was invented in Eureka by Albert Arentz in 1870. The town of Eureka was founded in 1869, and on March 1, 1873, Eureka County was formed from part of Lander County with Eureka as the county seat. The Eureka District was the first great silver-lead district in the United States. From 1869 to 1882, it produced approximately \$40,000,000 in silver, \$20,000,000 in gold, and 225,000 tons of lead. If the lead be valued at \$90 per ton, the production of all three metals for that period was about \$80,000,000. Two other lead-silver districts which conducted smelting operations of importance in the early days were Battle Mountain [31] in Lander County and

Tybo [480] in Nye County. Battle Mountain District was organized in 1866 and a mill and two smelters were installed at Galena by 1870. It is estimated that about \$5,000,000 in silver, lead and gold was produced from the veins near Galena, and upwards of \$1,000,000 in silver from the Little Giant Mine, but no figures for the early production of the entire district are available. From 1902 to 1920, the district produced \$2,383,775, the principal value being in copper. Ore was discovered at Tybo in 1866, and the district organized in 1870. A smelter was built after the organization of the district and another in 1875. Smelting continued until 1879, and an important production was made but no records of the amount are obtainable.

CANDELARIA DISTRICT

The Candelaria District [76], now in Mineral County, was discovered and organized by Mexicans in 1864, and its principal mine, the Northern Belle, was located the following year, but the district failed to come into prominence until the relocation of that mine in 1870. The Candelaria District produced about \$20,000,000 in the early days, mainly in silver. The Pine Grove District [520], also in Mineral County, was discovered by William Wilson in 1866, and its two principal mines are estimated to have produced about \$8,000,000 in gold and silver up to 1893. The Palmetto District [331] in Esmeralda County was discovered by Bunyard, Israel and McNutt in 1866; and the Palmetto Mine is credited with a production of \$6,500,000. The gold placers of the Tuscarora District [478] were found by the Beard Brothers in 1867, and the silver lodes of the district were discovered a few years later. The district produced from \$25,000,000 to \$40,000,000; mostly in the period from 1872 to 1885. Elko County, in which the Tuscarora District is situated, was separated from Lander County on March 5, 1869. The Mineral Hill District [294] was discovered by prospectors from Austin in 1868 and produced more than \$6,000,000 in the early days. The Paradise Valley District [337] was also discovered in 1868. It produced some \$3,000,000. With these important strikes, what has been designated as the Early Discovery Period of Nevada mining came to a close, and the Early Prosperity Period began.

FIRST BULLION PRODUCTION

The early bullion production of the Johnstown placers was not recorded, and the first bullion production on record for Nevada is that of \$50,000 for the



Lead smelter at Eureka. Nevada Historical Society photo.

year 1859, the year in which the Comstock Lode was discovered. As a result of the discovery and exploitation of the Comstock and other early mining districts, the bullion production of the state rose rapidly to \$17,407,643 in 1867. The total recorded bullion production for the ten-year period from 1859 to 1868 was \$102,132,643; equivalent to an annual average production of \$10,000,000, and making up 20 per cent of the total bullion production of the entire United States for the same period. During this and the succeeding period, immense quantities of salt for metallurgical use were produced from the salt marshes of Nevada.

FIRST RAILROADS ENTER

The Central Pacific R. R. entered Nevada from California in December, 1867; reached Reno in May, 1868; and joined the Union Pacific R. R. at Promontory, Utah, on May 10, 1869, thus completing the first transcontinental line. The Virginia and Truckee R. R. was completed from Carson City to Virginia City on November 12 of that same year but did not make connections with the Central Pacific R. R. at Reno until 1872. The Eureka Nevada R. R. connected Eureka with Palisade on the transcontinental line in 1875; and the Nevada Central R. R. connected Austin with Battle Mountain on that line in 1880. The Nevada-California-Oregon R. R. out of Reno was begun in 1880 and gradually extended to Lakeview, Oregon. The Carson and Colorado R. R. was constructed from Mound House on the Virginia and Truckee R. R. to Hawthorne in 1881, and extended later. The construction of these railway lines stimulated mining in Nevada, and was an important factor in bringing about the Early Prosperity Period.

EARLY PROSPERITY

The Early Prosperity Period lasted from 1869 till 1880. During this time no new districts of importance were discovered, but the production of bullion from districts found during the Early Discovery Period continued and increased. The maximum annual bullion production of Nevada came of this period, - being \$47,676,863 for the year 1878. The total bullion production during these twelve years was \$359,921,773; equivalent to an average annual production of \$30,000,000; and making up 40 per cent of the total bullion production of the United States for the same period. The maximum annual production of lead in Nevada also came in the year 1878 and amounted to 31,063 tons. The total production of lead in Nevada

from 1871 to 1880 was 152,579 tons; equivalent to an average annual production of over 15,000 tons. During the Early Prosperity Period, Nevada was the principal producer of borax in the United States. The population of Nevada rose from 42,491 in 1870 to 62,266 in 1880.

PERIOD OF DECLINE

The Early Period of Decline began in 1881 extending until 1891. No important mines were discovered, and production fell off notably although not reaching the depth attained in the succeeding Period of Depression. The average annual bullion production was about \$9,000,000; and the lead production 5,000 tons; these productions being about one-third those of the preceding period. The population of Nevada fell to 47,335 in 1890.

The Early Prosperity Period opened with silver at \$1.33 an ounce. Silver was demonetized in 1873 and the price dropped gradually, being slightly boosted for brief periods by the Bland-Allison Act in 1878 and the Sherman Act in 1890, until it stood at \$0.87 at the opening of the Early Period of Depression in 1892. Subsequent to 1892, the average annual price of silver continued to fall, reaching \$0.59 in 1898 and not again exceeding \$0.68 until the year 1917 in the Late Prosperity Period.

The Early Period of Depression lasted from 1892 to 1899. It was brought about by the depletion of the mines previously discovered, coupled with the failure to find many new ones, and was made still more marked by the drop in the price of silver. The bullion production for this period amounted to \$26,058,053; an average annual production of only \$3,000,000, or one-third that in the preceding period. During the Early Period of Depression came the lowest bullion production of Nevada since 1860, - \$2,218,200 for 1894. The lead production was also low, being 21,078 tons for the period.

One important discovery served to increase the bullion production of this depressed period. The Ferguson District [120] was found in 1892, and its principal properties were purchased by Captain Delamar in 1893. The Delamar Mine soon afterward began to make an important production of gold bullion and was the principal bullion producer in Nevada up to 1900. This mine is credited with a production of \$35,000,000. The Searchlight District [408] was also discovered during this Period of Depression, in 1897. It produced about \$5,000,000; but the bulk of this production was made in later periods, the recorded production from 1904 to 1921 being \$3,659,251.

DISCOVERY OF TONOPAH

The Early Period of Depression was brought to a close by the discovery of Tonopah, and the Late Discovery Period thereby inaugurated. James L. Butler discovered the Tonopah District [467] on May 17, 1900, and after considerable delay, arranged for Tasker L. Oddie and Wilse Brougher to take up the ground, which they did on August 27. About one ton of ore of net value \$600 was taken out by Oddie and Brougher that year, and the following year leasers mined ore to the value of some \$4,000,000 but were unable to ship much of it on account of inadequate transportation and smelting facilities. In 1902, the original property was sold to the Tonopah Mining Company which completed a railroad in 1904, after which the production of the district greatly increased; and the output was still further augmented by the construction and operation of cyanide mills which began in 1906. From 1900 to 1920, the Tonopah District produced \$114,867,868 and it is at the present time the biggest producer of siliceous silver ores in the United States.



THEN CAME GOLDFIELD

The discovery of rich silver ore at Tonopah greatly stimulated prospecting in Nevada and resulted indirectly in the discovery of many other important camps, the first and most valuable of the new finds being Goldfield. Harry Stimler and William Marsh discovered the Goldfield District [199] on December 2, 1902. The discovery was followed by a brief period of excitement, but as no orebodies were immediately uncovered, the excitement died down, the prospectors almost all left, and the original claims were allowed to lapse. On May 24, 1903, A. D. Meyers and R. C. Hart located the Combination lode in the Goldfield District. Ore was found on this claim in October, shipments began in December, and the big Goldfield rush followed. The railroad reached Goldfield in 1905, at which time the district had a population of about 8,000. Mills were built, the 100-stamp mill of the Goldfield Consolidated Mines Company being completed in 1908, in which year Goldfield reached its maximum population of 20,000. From 1903 to 1921, the production of the district was \$84,878,592. Goldfield was for many years the biggest gold producer in Nevada, but its present output is small.

MANHATTAN DISTRICT

The Manhattan District [279] in Nye County north of Tonopah was discovered by John C. Humphrey in April, 1905, and a rush of prospectors ensued. From 1906 to 1920, the district produced \$4,110,101. Round Mountain [385] to the north of Manhattan and also in Nye County was discovered by L. D. Gordon in 1906. From 1906 to 1920, it produced \$4,818,034.

The Fairview District [163] in Churchill County was discovered in 1905 and a rush took place to the district the following year. The Fairview District produced \$3,843,624 to 1921; but its principal mine, the Nevada Hills shutdown in 1917, and the production since that date has been slight. The Wonder District [525] lying to the west of the Fairview District in the same county was discovered by J. L. Stroud in 1906; and had a somewhat similar history. Its principal mine, the Nevada Wonder, paid \$1,549,005 in dividends, but was closed up in 1919 and the district has been inactive since. The production of the Wonder District from 1907 to 1921 was \$5,838,765. The Rawhide District [365] lies to the south of Fairview and Wonder, just over the border in what is now Mineral County. It was discovered in 1907 and has been working in a small way since that date, producing from 1908 to 1920, \$1,403,696.



Loading and hauling sacks of ore from the Mizpah mine, Tonopah, 1901. *Nevada Historical Society photo.*

Prospecting began at Seven Troughs [411], in what is now Pershing County, about 1905, but outside interest was not aroused until 1907. From 1908 to 1920, this district produced \$2,602,740. The National District [318] in northern Humboldt County was discovered by J. L. Workman in 1907. Up to 1921 it produced \$3,444,997 from high grade gold ore. In the summer of 1907, ore was discovered at Gold Circle [192] and the following spring a rush to the new camp took place. From 1908 to 1920, this district produced \$2,153,443.

The Late Discovery Period began with the discovery of Tonopah in 1900 and was closed with the discoveries of Rawhide, National and Gold Circle in 1907. The bullion production of Nevada during this period rose rapidly from \$2,848,594 in 1900 to \$20,876,100 in 1907; making a total of \$70,208,223 for the period which is an annual average of nearly \$9,000,000. The lead production of Nevada was not affected by these discoveries and remained low, the total for the period being 16,215 tons. The production of copper in Nevada which has been insignificant and irregular in preceding periods, became more regular and began to increase although still unimportant. In 1900 it was 437,396 pounds and in 1907, 1,998,164 pounds; while the total for the period was 4,817,535 pounds, an annual average of 600,000 pounds. Zinc production in Nevada began in 1905 and amounted to 1,084 tons in 1907. At the opening of the Late Discovery Period the population of Nevada had decreased to 42,335, a trifle less than the population in 1870. As a result of the discoveries and booms of this period, it rose to 81,875 in 1910, the highest point yet reached.

MORE RAILROADS BUILT

The Late Prosperity Period followed the Late Discovery Period and was ushered in by the building of railroads in much the same manner as was the Early Prosperity Period. The Tonopah and Goldfield R. R. connected Tonopah with the Carson and Colorado R. R. now a branch of the Southern Pacific System in 1904, and made a connection with Goldfield in 1905. The Los Angeles and Salt Lake R. R., now a branch of the Union Pacific system, was the second transcontinental route to cross Nevada. It was completed in 1905, and made connections with Goldfield in 1907. The Silver Peak R. R. was completed from Blair Junction on the Tonopah and Goldfield R. R. to Blair in 1906. In 1907, the Barnwell and Searchlight R. R. connected the Searchlight District with the Atchison, Topeka and Santa Fe R. R.; and the Tonopah and Tidewater R. R. built from Ludlow on

the Santa Fe line to Rhyolite in 1906 and was connected with Goldfield by the Bullfrog Goldfield R. R. in 1907. The Nevada Northern R. R. was completed from Cobre on the Central Pacific R. R., now part of the Southern Pacific System, to Ely in 1906 and extended to the copper mines of the Ely District in 1908. The Nevada Copper Belt R. R. was built from Wabuska on the Carson and Colorado Branch of the Southern Pacific to Yerington and Mason in 1910 and later extended to the Nevada Douglas mine at Ludwig. The Western Pacific R. R., third of the transcontinental lines to cross Nevada, was completed in 1910.

The first cyanide plant in Nevada was constructed at Silver City in 1896 by R. D. Jackson to treat tailings from the Comstock. The first cyanide plant to treat raw ore was that erected at the Delamar Mine a short time later. All the important camps discovered during the Late Discovery Period built cyanide mills, and the use of the cyanide process spread to the other large precious metal mining districts in Nevada. A few small copper furnaces had been constructed in Nevada in the early days, but the first large copper smelter was erected at McGill on the newly completed Nevada Northern R. R. and that at Wabuska on the newly completed Nevada Copper Belt R. R.

COPPER PRODUCTION

Three copper camps discovered in the early days first became important producers in the Late Prosperity Period. The Yerington District [526] was known at least as early as 1865, when attempts were made to work the oxidized copper ore of the Ludwig Mine; but its production was not important until after the building of the Wabuska smelter and the completion of the Nevada Copper Belt R. R. From 1905 to 1920 the Yerington District produced 85,846,411 pounds of copper and the total value of its production including a little gold, silver, and lead was \$17,731,767. The Ely District [378] was organized in 1868, but was of little importance until after the completion of the Nevada Northern R. R. and the construction of the smelter at McGill, when it became the greatest copper producer in Nevada. The first recorded copper production is of 11,814 pounds for 1907, which was increased more than a thousand fold in 1908. From 1907 to 1920, the Ely District produced 833,590,984 pounds of copper, which together with small amounts of gold, silver, zinc, and lead had a value of \$162,810,242; equaling its average annual production of about \$12,000,000. The Ely District is thus nearly ten times as important a copper producer as the Yerington District; while the Santa Fe District [402] on the Southern Pacific branch line near Luning

is about one-tenth as important as Yerington. The Santa Fe District is said to have been discovered in 1879. It produced 8,849,597 pounds of copper from 1906 to 1920, the total value of its metal production for this period being \$2,406,839.

It will be remembered that the Potosi Mine discovered by the Mormons in 1850 was the first of the modern lode mines of Nevada. Just fifty years later the presence of zinc was recognized in this mine. Shipments were made, other discoveries including that of the big Yellow Pine Mine took place, and the Yellow Pine District became not only the first but also the largest zinc producer in Nevada. The production of zinc from the Yellow Pine District from 1905 to 1921 was 78,346 tons, and the total value of the metal product of the district from 1902 to 1921 including zinc, lead, silver, copper and gold was \$19,999,424.

NEW DISCOVERIES



New precious metal discoveries of importance were made in three known districts during the Late Prosperity Period. The Jarbidge District [235] had been explored in the early days but did not become of importance until relocated by D. C. Bourne in 1909. A rush took place to the new camp in 1910. With the decline of Goldfield, Jarbidge became the largest gold producer in Nevada, its total production being \$2,079,376 to 1921. The Rochester District [380] was also prospected in the early days. It was relocated by Joseph Nenzel in 1911, large orebodies were found in 1912, and a rush ensued in 1913. The camp produced \$5,447,754 up to 1920, and is at present the second important silver camp in Nevada being only exceeded in production by Tonopah, although its production is only about one-tenth as much. The Divide District [132] was found in 1901 by Runge and Rochelle, but did not become of importance until H. C. Brougher discovered rich silver ore there in 1918. A stampede followed which rivalled the big Goldfield rush. Some two hundred mining companies were incorporated to explore the district and fifty or more of these were adequately financed. Several more mines were discovered, although none approached the original Tonopah Divide Mine in richness, and the boom collapsed in 1919. Many of the Divide companies had money in their treasuries after proving their properties to be valueless, and purchased properties or undertook exploration work in various parts of Nevada and neighboring states.

Clark County was formed from southern Lincoln County on July 1, 1909, and Las Vegas was made the

county seat. Mineral County was formed from northern Esmeralda County on February 10, 1911, and Hawthorne was made the county seat. The Esmeralda District [24] for which Esmeralda County was named became part of Mineral County. Pershing County was formed from southern Humboldt County on March 18, 1919, and Lovelock was made the county seat.

WAR STIMULATES PRODUCTION

The World War which occurred during the latter part of the Late Prosperity Period served to stimulate Nevada mining by raising the price of silver and the base metals and creating a demand for the less common metals valuable for war purposes. For the year 1914 in which the war began, the average price of silver was 55.3 cents an ounce; of copper, 13.3 cents a pound; of lead, 3.9 cents a pound; and of zinc, 5.1 cents a pound. These prices all rose rapidly until for 1917 the average price of silver was 82.4 cents, of copper 27.3 cents, of lead 8.6 cents, and of zinc 10.2 cents. With the close of the war in 1918, all of these prices save that of silver dropped rapidly. The Pittman Act of April 23, 1918, authorized the sale of silver bullion from the United States Treasury for use in India as a war measure, the amount of silver thus sold to be repurchased from American producers at \$1 an ounce. \$260,000,000 in silver dollars was reduced to bullion and shipped to India under this law; and the repurchase of American silver to replace this sum has not yet been completed. The principal war minerals mined in Nevada were tungsten, manganese and antimony, while small amounts of molybdenum, uranium, and vanadium were also purchased.

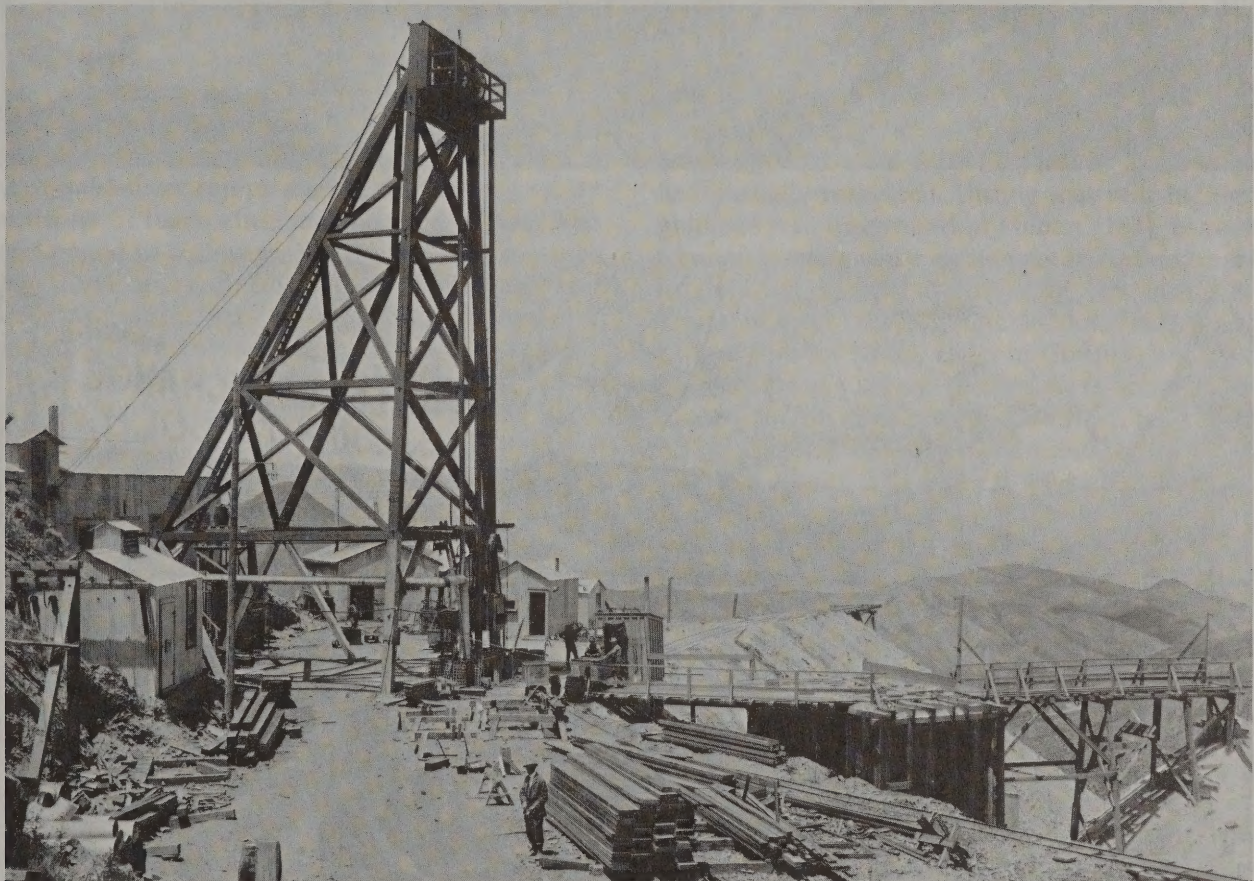
METALS PRODUCTION

The Late Prosperity Period followed the Late Discovery Period beginning in 1908, and lasted till 1918 when the World War ended, to be followed by the Late Period of Decline in 1919. The bullion production for this period was \$222,419,042; making an annual average production of about \$20,000,000 just as in the Early Prosperity Period. This was 15 per cent of the total bullion production of the United States for the same period. The production of lead for this period was 70,435 tons, being an annual average of about 6,000 tons which was a great increase over that of the Late Discovery Period but only a little over half that of the Early Prosperity Period. This was the first period in which an important zinc production was made, there being produced 73,480 tons, or slightly

more than of lead. Most noteworthy of all, however, was the copper production of the Late Prosperity Period which exceeded in value the gold production and the silver production and amounted to about three-quarters of the combined gold and silver production of the state. 819,940,595 pounds of copper were produced having a value of \$161,790,009 and being more than 5 per cent of the total copper production of the United States for that same period. From 1915 to 1918, Nevada produced tungsten concentrates to the value of \$3,650,485.

With the close of the World War, the demand for war minerals ceased abruptly, and the prices of the base metals fell so as greatly to depress that branch of

mining. The precious metal mines discovered during the Late Discovery Period became nearly depleted with the exception of those of Tonopah, and few new discoveries were made. High prices greatly discouraged gold mining, and the only bright spot in an otherwise gloomy outlook was the temporary maintenance of the price of silver at \$1 an ounce due to the Pittman Act. Silver mining therefore flourished in Nevada till 1923 despite the depressed condition of the rest of the mining industry, and the bullion production was only lowered to about half that of the preceding period. The population in 1920 showed a decrease from that of 1910 - being only 77,407 or but 15,000 more than it had been 40 years earlier.



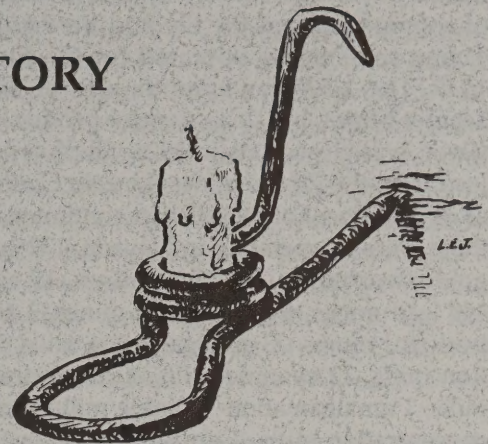
Headframe at the Nevada Wonder mine, Wonder district, Churchill County, circa 1910. *Nevada Historical Society photo.*



Weepah, Esmeralda County, the "last gold rush," circa 1927. W. M. Keck Mineral Museum photos.

AN OUTLINE OF THE MINING HISTORY OF NEVADA, 1924-1964

Written in 1964 by
Robert C. Horton



The mining history of Nevada prior to 1923 was marked by two periods of discovery, prosperity, and decline, and one period of depression, as discussed by Lincoln [in the previous section]. The periods of discovery were marked by the beginning of operations at gold-silver camps and, to a lesser degree, by operations at lead, zinc, and copper camps. The second period of discovery, 1900 to 1907, when camps such as Tonopah, Goldfield, Jarbidge, Manhattan, and others were found, was the last genuine discovery period. Additional discoveries were made after 1907, but their importance tended to be lost, with few exceptions, in the general mining picture. Discoveries in new methods of mining and metallurgy revived old camps. Price changes radically affected mining activity, and demands for new metals and minerals added new life to mining.

At the end of 100 years of Nevada statehood the layman might expect to find mining a dying industry, surviving only on the little left by those miners gone before. Fortunately this is not the case. Nevada mining is not only healthy, it is promising a boom unlike any seen in the past. The discovery of a large gold deposit north of Carlin, Elko County, has stimulated exploration in that general area by scores of mining companies. Further, it appears that mining problems associated with the deep ores at Eureka have been solved, and that the old camp may soon see new life. Elsewhere in the State there are promising developments in copper, iron, and molybdenum. All in all, the Nevada mining economy is on an elevated plateau that promises a long life with no steep slopes of decline or deep valleys of depression that marked the first 100 years.

1924-1934, PROFITS AND PANIC

Lowered metal prices and decreased demand had caused a reduction in Nevada's mineral production following World War I. By 1924 however, the industry had partially recovered. During that year high-grade gold ore was discovered at Gilbert [183], Esmeralda County, causing some excitement. Efforts were being made to re-establish the tungsten industry at Tungsten and in the Nightingale Mountains, Pershing County; near Pioche, Lincoln County; and east of Mina, Mineral County. Lessees were active in many of the gold-silver camps. At Goldfield, the Goldfield Deep Mines Company continued sinking a deep shaft, aiming for a depth of 2,400 feet with the intent of exploring for ore below the old workings. A demand for arsenic for use in insecticides had caused many mine operators to prospect for and produce this normally undesirable element. Nearly 12,000 tons of arsenic ore and speiss were shipped during 1924.

Because of the general increase in metal prices, the revival of Nevada's mining camps continued during 1925 despite a serious decrease in output of gold and silver from Tonopah. Development continued at the Gilbert gold discovery; high-grade lead-silver ore was found at Quartz Mountain [269] and silver-lead ore at Chalk Mountain [86]. Gold was discovered at the new camp of Westville, a few miles north of Wonder, Mineral County; and at Gold Basin [186], east of Fairview. The Yellow Pine district [202] continued active, and a demand for sulfide zinc ore resulted in the reopening of the Potosi mine, originally worked by a Mormon association in 1857.

The year 1926 saw new production highs, but the increase was due entirely to an increased production of copper ore from the Ely and Yerington areas. The Thompson smelter operated for the first time since 1919. The 1,500-ton cyanide mill of the Comstock Merger Mines, Inc., long a major producer of gold and silver, was closed late in 1926. Shipments of zinc and lead from the Pioche mines, Lincoln County, increased as development of that district continued. During 1926 there were in operation in Nevada, 139 gold mines, 18 gold-silver mines, 56 silver mines, 15 copper mines, 149 lead mines, 6 copper-lead mines, 3 zinc mines, 22 lead-zinc mines, 23 amalgamation mills, 20 concentration mills, 12 cyanide mills, 2 concentration-cyanide mills, 1 amalgamation-cyanide mill, 6 amalgamation-concentration mills, 1 amalgamation-cyanide-concentration mill, and 1 copper-leaching mill.

In 1927 the total value of the mine production of gold, silver, copper, lead, and zinc in Nevada was 5 percent less than in 1926. The decrease was caused by a decline in metal prices, and the quantity produced of all metals, except copper, declined. The value of metal production from White Pine County, largely copper from the Ely operations, was \$15,282,846, nearly twice as much as that of all other counties combined. This trend continued into 1927, when White Pine County yielded over 71 percent of the total value of metals produced in Nevada.

The outstanding event of 1927 was the beginning and end of Nevada's last gold rush, the "Weepah Boom" [502]. High-grade gold ore was discovered on the property of the Weepah mine, Esmeralda County, by the son of the mine owner and a companion. News reports grossly exaggerated both the volume and value of the ore, and hundreds of persons poured into the camp in search of their fortune. Although the boom vanished almost as fast as it had formed, the mine was to become an important gold producer in later years.

The years 1928 and 1929 saw the production high point of the post-World War I years, as the mining industry was doomed to suffer along with the rest of the nation in the depression yet to come. Thirty-one million dollars worth of gold, silver, copper, lead, and zinc were produced in 1928 and 33 million dollars worth in 1929. Despite the copper boom in White Pine County, all was not joy, as the Thompson smelter, long a landmark in Mason Valley in Lyon County, closed forever in December 1928. This smelter had been blown in during January 1912 and operated until 1914. Operation was resumed in February 1917, but two years later the smelter closed. Operation was resumed in 1926 and the smelter ran continuously until the end of 1928 when it was closed and dismantled. This wrote the end to copper mining at

Yerington and the rest of Mason Valley, or so many thought. But Nevada mining camps have a tenacious hold on life and, though dormant, copper mining at Yerington was to return with a vengeance a quarter of a century later - and the best may yet lie ahead.

Elsewhere in Nevada during 1928 and 1929, mining prospered. The Treadwell-Yukon Company, Ltd., purchased many of the mines at Tybo [480], Nye County, and in May 1929, began milling 350 tons of lead-zinc ore per day. The Bradshaw Syndicate, Inc., leased the Goldfield Consolidated tailings and milled 242,000 tons during 1928-29. In June 1928 the Comstock Tunnel and Drainage Company purchased, through its subsidiary the Sutro Tunnel Coalition, Inc., all of the mines of the Comstock Company. This placed under one management most of the important mines of the Comstock, including the Gould and Curry, Best and Belcher, Andes, Savage, Hale, Confidence, Challenge, Yellow Jacket, Crown Point, Belcher, Kentuck, Overman, Caledonia, New York, Alta, and Lady Washington. The Seven Troughs Gold Mines Company started work on a new cyanide mill; plans were made for a new reduction plant near Round Mountain for the Gold Hill Development Company; the Nevada Porphyry Gold Mines Company took over the Round Mountain mine and planned to increase the capacity of the amalgamation mill to treat ore from both the lode and placer mines.

In 1927 the price of quicksilver had risen to more than \$100 a flask, and production from the Pershing and Juniper mines in the Antelope Springs district [11], the B & B and Red Rock mines in the Fish Lake Valley district [169], and the Castle Peak mine in the Castle Peak district [82] resulted in a new high recovery of nearly 5,000 flasks in 1929.

The Tonopah region was affected most seriously by the declining price of silver in 1929. The Tonopah Belmont and Tonopah mining companies ceased mining on company account, giving over the operations of part, if not all, of their mines to lessees. The West End Consolidated suspended activities altogether. The Tonopah Extension was sold by its receiver. Other silver mines in Nevada also were forced to close or drastically reduce operations.

The depression years of 1930, 1931, 1932, and 1933 seriously damaged Nevada mining. The value of mineral production in 1933 was only one-sixth of that of 1929. The lowest point was reached in 1932, when only \$5,133,792 worth of precious and base metals was produced. The only time in previous Nevada mining history when production was so low occurred during the post-Comstock pre-Tonopah years of 1893 to 1903.

At the beginning of 1931 copper production at Ely was less than 40 percent of capacity. Lead producers

sharply curtailed operations. The Tybo mine of the Yukon-Treadwell Company, Inc., largest lead producer in Nevada, reduced its output 50 percent early in 1931 and discontinued operations in October of that year. The Goldfield Consolidated Deep Mine Company completed a three-compartment vertical shaft to a depth of 2,335 feet but, because of lack of funds, was forced to abandon the project and allow the shaft to flood. The leading gold producers in 1932 were the Elko Mines Company at Jarbidge [235]; The Bradshaw Syndicate Inc., at Goldfield; the Nevada Consolidated Copper Company at Ely [378], and the Gold Hill Development Company and Nevada Porphyry Gold Mines, Inc., both at Round Mountain [385]. The outstanding development of this period was the opening of a large deposit of copper ore in the Rio Tinto mine at Mountain City [309]. In 1919 Mr. S. F. Hunt had located claims on the gossan that overlies the Rio Tinto ore body. Persistent work under great difficulty and with inadequate financial resources was rewarded by the discovery of rich secondary copper ore beneath the gossan at a depth of 242 feet, within a few feet of where Mr. Hunt had predicted he would find the ore.

A noticeable increase in gold-mining operations followed the rise in gold prices in 1933, particularly in the Comstock district [103] where there was much activity among the old-time silver-gold producers. Mills at Silver City were busy on custom ore, and both the Comstock and Silver City districts took on new life. In June 1933 all the assets of the Nevada Consolidated Copper Company were acquired by the Kennecott Copper Corporation. The Consolidated Coppermines Corporation was the only other major mining company active in that district.

1934-1944, THE RISE AND FALL OF GOLD

Increases in the average price per ounce of gold from \$25.56 to \$34.95, and of silver from \$0.35 to \$0.64 in 1933 gave a stimulus to Nevada mining that resulted in widespread precious-metal mining. The combination of high prices and low costs, occasioned by the depression, is not likely to be repeated. Mines containing ore having a value as low as \$1.75 per ton were successfully operated using open-pit methods, and many small underground mines made a profit on ore containing \$6.00 to \$8.00 worth of gold and silver per ton of ore. In 1934 gold was the leading metal produced in Nevada, in terms of market value, constituting 41 percent of the total value of all metals. The Tonopah district [467] was revived, and increased production was reported from the Divide [132], Manhattan [279], Comstock Lode [103], Battle

Mountain [31], Silver Peak [422], and Tybo [480] districts, along with others.

During 1935 White Pine County was the largest contributor to mineral wealth in Nevada, and it appeared that the county would forge even further into the lead with the increasing copper output of the Ely area. Clark County was the scene of a general revival and the Crescent [113], Eldorado Canyon [153], and Searchlight [408] districts were particularly active. Elko County sprang into prominence as a copper producer when the International Mining and Smelting Company took over operations of the Rio Tinto mine. The Weepah Nevada Mining Company built a 250-ton flotation mill at Weepah [502], Esmeralda County.

Continued expansion of copper and gold production marked 1936. Until that year the mining industry of the State was helped more by price-raising legislation than by free metal markets. During 1936 however, price rises that accompanied the expanding consumption of copper, lead, and zinc, proved to be dominant factors in the continued return of prosperity to Nevada's mineral industry. Unfavorable economic conditions in the nation served as a brake on that expansion however and, in 1937, production of gold, silver, and lead decreased while copper and zinc production increased slightly. The leveling-off of gold and silver production was significant, as it marked the end of the stimulus given Nevada's precious-metal mines by the high gold and silver prices.

The year 1938 marked the start of what might have become another period of decline and depression. Production of all metals dropped sharply, led by 27 percent decrease in copper production as compared to 1937. Among the major producers who ceased operations late in 1937 or during 1938 were Eastern Exploration Company, Goldfield district; Arizona Comstock Mining Corp., Comstock district [103]; Buckhorn Mining Company, Buckhorn district [58], Eureka County; Treadwell-Yukon Company, Ltd., Tybo district [480]; and Pioche Mines Consolidated, Pioche district [347]. All was not black, as the Getchell Mine, Inc., began production at its newly discovered gold mine in the Potosi district [351], Humboldt County.

The beginning of World War II in 1939 reversed the decline in mineral production and caused a 30 percent increase. Expansion of activities at the three large copper mines in Nevada - Nevada Consolidated Copper Corp., Consolidated Coppermines Corp., and Mountain City Copper Company - resulted in a 44 percent increase in copper production.

Activity in all metals increased during 1940. The Northumberland Mining Company began full-scale operation of its 280-ton cyanide plant, completed in



Mine buildings, Rio Tinto, Elko County, circa 1940. Nevada Historical Society photo.

1939, and plans were made for expanding the capacity to 360 tons. Summit King Mines, Ltd., initiated operation of its new 65-ton cyanide mill in January 1940. The Combined Metals Reduction Company started construction of a 1,000-ton flotation mill at Caselton. Custom mills operated at various places in Nevada during 1940; those of importance were at Silver City, Westgate, Gold Point, and Nelson.

Cessation of old-tailings cyanidation in 1940 by the Bradshaw Syndicate, Inc., in the Goldfield district [199], and the Caliente Cyaniding Company in the Ferguson district [120] terminated the large-scale working of old tailings in the State. Placer-mining activity was at a new high, however. The connected-bucket dredge of the Manhattan Gold Dredging Company in the Manhattan district [279] was the principal producer of placer gold in Nevada in 1940. In addition, 3 dragline excavators, 85 small-scale hand-method mines, and 17 placer drift mines were in operation. Late in the year the world's largest dragline dredge, equipped with a dragline excavator using a 14-cubic-yard bucket, was installed at Dayton by the Dayton Dredging Company.

There had been little interest in mercury mining between 1932 and 1939 because of the prevalent low price. In 1939 the price increased to \$150 per flask, and by 1940 many new mines, particularly those in the Bottle Creek district [53], yielded so much mercury that production increased from less than 800 flasks in 1939 to a new high of nearly 6,000 flasks.

Interest in tungsten was also increasing. The Nevada-Massachusetts Company at Tungsten, Pershing County, long the largest individual source of tungsten in the United States, completed a plant for retreatment of tailings, and a new chemical treatment plant at Golconda [185] was expected to go into operation early in 1941.

Continued expansion of copper production in 1941 and 1942 accounted for most of the increase in tonnage of ore treated as compared to 1940. Other metals continued at a high level of production until October 1942, when Order L-208 of the War Production Board forced most gold mines to close, and all of Nevada's custom cyanide mills suspended operations. Gold production dropped from 366,403 ounces in 1941 and 295,403 ounces in 1942 to 144,442 ounces in 1943. Most of the gold produced in 1943 was a by-product of copper mining. The Manhattan Gold Dredging Company was allowed to operate because of the danger of loosing the dredge in a narrow canyon subject to floods.

Nevada's gold mining industry, indeed the nation's gold mining industry, has yet to recover from the effects of Order L-208. Mines are not pipelines that may be turned on and off at will, but are more like

pieces of machinery that require constant maintenance. During the forced closure of the gold mines many filled with water, others collapsed and caved, while others were stripped of their equipment. This damage, plus the higher cost of supplies and labor, prevented many of the mines from opening after cancellation of the order.

Metal production dropped in 1943. Higher wages, enlistment of miners in the armed forces, migration of miners to war industries, rising prices of supplies and equipment and difficulties in obtaining them, and increased taxes, all contributed.

Mercury mines prospered in 1942-43, with 40 mines in operation. The principal mine in both years - and for many years since then - was the Cordero mine in Humboldt County. There were 5,201 flasks of mercury produced in 1942 and 4,577 flasks in 1943.

Tungsten operations also produced at a maximum during the war years. The Nevada-Massachusetts Company and affiliated companies operated mills at Tungsten, Golconda, and Toulon. Smaller but important producers of tungsten concentrates were Nevada Scheelite Inc., operating the Leonard mine in Mineral County; Tungsten Metals Corp., operating the Scheelite Chief, Oriole, Everitt, and Silver Bell mines in White Pine County; and M.G.L. Mining Corp., operating the M.G.L. mine in Pershing County. Getchell Mines, Inc., one of Nevada's youngest and largest gold producers, was fortunate enough to discover tungsten ore adjacent to the gold ore body. A flotation mill began treating tungsten ores in August 1942, and continued operating through the war years.

1944-1954, BETWEEN WARS

Demand for manganese ore for war materials resulted in the opening of a number of manganese mines. Production reached a high point in 1944 with the operation of the Three Kids Mines, Clark County, by the Manganese Ore Company. The remainder of the production came largely from the Manganese Mining Company mines in White Pine County, the Black Rock mine in Lander County, and the Black Diablo mine in Pershing County. The leaching and nodulizing plant of the Manganese Ore Company began operations in October 1943, but closed down in September 1944 after producing 13,963 tons of nodules. The plant, designed to produce 100,000 tons of nodules annually, failed to reach anything near capacity operation.

Desire of the Federal Government to increase magnesium production in the United States led to the large scale mining of brucite and magnesite at Gabbs [174], Nye County. The ore was hauled by truck to the

Basic Magnesium plant at Henderson, Clark County, for conversion into metallic magnesium. The project was short lived in the production of magnesium, but both the mine and the mill continue to contribute to Nevada's economy. The Henderson plant, no longer producing magnesium, has formed a solid industrial-plant base upon which a substantial chemical and metal industry has developed. The status of the Basic Magnesium operation during the war may be gleaned from the March 13, 1944 Report of the Senate Special Committee to Investigate the National Defense Program, Harry S. Truman, chairman. Discussions of various processes, used and not used, and a detailed record of the "bungling and incompetence displayed in the promotion and construction of Basic Magnesium plant at Las Vegas, Nevada," take up much of the space in the report.

Gold production in Nevada in 1944 was the lowest since 1933. The curtailment of gold mining and the stimulation of base-metal mining is evidenced by the fact that by-product gold from base metal mines in 1943 and 1944 exceeded gold derived from gold mines for the first time in the history of the State. Also, base metal ore was the source of 81 percent of the silver in 1944. Reduced copper-ore production resulted from a chronic labor shortage throughout the State, a condition which grew progressively worse as the year passed. Production of lead-zinc concentrates at Pioche increased as Combined Metals Reduction Company raised its mill capacity from 500 to 1,000 tons per day. The Getchell Mine, which had terminated tungsten mining June 1944, resumed operations of its 1,000-ton gold cyanide plant and gold mining operations. However, the company suspended gold mining operations about May 1, 1945, because of a shortage of labor and materials.

An expected increase in production of gold following the rescinding of War Production Board Order L-208 on July 1, 1945, did not materialize except at placer mines. Gold production for the year, 92,265 ounces, was the lowest in quantity since 1895 and silver production the lowest since 1899. Zinc production set a new high.

In 1946 Nevada was the leading tungsten-producing state in the nation. The Nevada-Massachusetts Company and its affiliate, Rare Metals Corp., continued to be the chief producers. In 1946 they operated mills at Toulon and Tungsten. The former plant suspended operations, however, on March 31, 1946. Other producers of tungsten concentrates in 1946 were the United States Vanadium Corporation's Riley mine; the Nevada Scheelite, Inc., mine; and the Cherry Creek Tungsten Corp. The Getchell mine also produced concentrates both from stockpiled ore and newly mined ore.

An increase in total tonnage of ore mined reflected increased prices paid for all metals except gold. It is notable that a greater tonnage of copper ore was treated to produce a smaller tonnage of copper in 1946 than in 1945, indicating a lower grade of ore.

The quantity of zinc produced in Nevada in 1947 showed a marked decline from the record level of 1946, largely owing to the expiration on June 30 of the Premium Price Plan for copper, lead, and zinc. The effect of the termination of this plan on copper and lead production was negligible, as the rise in market price, greater labor supply, and strong demand, were factors contributing to a maintained level of output of these metals. The higher Government price paid for silver after June 30, 1946 - a raise from \$0.711 to \$0.905 per ounce - was a principal factor in the 10 percent rise in the value of silver production.

The years 1948-50 saw a continuation of relative prosperity in Nevada mining. The effects of World War II had faded, and the effects of the Korean War were yet to be felt. Exaggerated metal demands and premium prices had disappeared, and the rules of a free market system were dominant. Gold and silver mining, although not booming, contributed to a steady mineral production. Some mines on the Comstock Lode began open-pit operations while others operated underground.

The start of the Korean War in June 1950 ended the short period of peacetime mining. The barely-revived gold and silver mining industry was dealt another blow by rising prices, high labor costs, and lack of supplies. Gold production dropped and silver output was the lowest recorded since 1899. Summit King Mines, Inc., second largest producer of silver in Nevada in 1951, closed its mines and mill in August owing to ore depletion. Conversion by Getchell Mine, Inc., to tungsten mining and milling again ended the substantial gold production in Humboldt County.

Responding to the extraordinary demand for base metals, expansion of open-pit mining during 1951 resulted in a sizable increase in Nevada copper production. However, the output of lead and zinc, reflecting the dearth of ore that could be developed rapidly and mined economically, fell considerably below 1950.

With a 90 percent production increase over 1950, Nevada moved into second place as a tungsten-producing state. There were 32 tungsten producers in 1951, but only 5 of these - Gabbs Exploration Company; Getchell Mine, Inc.; Lindsay Mining Company; Nevada-Massachusetts Company; and Nevada Scheelite Company - supplied 95 percent of the total production.

Nevada ranked second to California in production of mercury in 1951, a position held also in 1950 and



Yerington mine and plant, Lyon County.

1949. The Cordero mine, Humboldt County, resumed production in the latter part of the year after a brief shutdown because of low mercury prices.

The outstanding mining event of 1951 was the first substantial production of Nevada iron ore. Iron ore had been first produced in Nevada in 1903 for use as a fluxing agent in Utah smelters. During World War II modest amounts were shipped to the Pacific Coast shipyards for use as ballast. But beginning in 1951 iron ore was shipped from Nevada to Japan, as well as to Pacific Coast, midwestern, and eastern consumers.

Stimulated by demands of the Korean War, Nevada mineral production continued to increase through 1952 and rose to an unprecedented dollar value high of \$73,668,000 in 1953. The healthy increase in outputs of copper and tungsten concentrates contributed heavily to this advance. Outstanding new developments were headed by Anaconda Copper Mining Company's Yerington project in Lyon County, on which expenditures for construction and development amounted to over \$20 million during the year. The first shipment of copper precipitates was made in November 1953 from a plant designed to produce 60 million pounds of copper annually from ores mined by open-pit methods.

Initial operation of the manganese section of the Caselton flotation mill of Combined Metals Reduction Company in Lincoln County, yielded manganese concentrates which were nodulized in a rotary kiln

installed at Caselton by the Pioche Manganese Company, an affiliate.

Copper production represented 48 percent of the State's total mineral production value and a very large percentage consisted of the combined yields of the Kennecott Copper Corp. and Consolidated Coppermines Corp. open pits at Ruth, near Ely. Tungsten ore mining prospered under the stimulus of Government purchasing, making Nevada the leading producer of this metal in 1953.

1954-1964, AN ERA ENDS- AN ERA BEGINS

Although the Korean armistice was signed on July 27, 1953, continued Government purchase programs and accelerated industrial demands established another record-breaking dollar value of \$86,871,000 for Nevada mineral production in 1954. The continuing high price and demand for copper resulted in a production which had the highest value ever recorded in Nevada. The output was derived from Kennecott Copper's Ruth, Kimberly, and Veteran pits; Consolidated Coppermine's Morris-Brooks pit, and Ruth pit extension, at Ruth, near Ely; and Anaconda's Yerington pit in Lyon County. The second largest source of mineral wealth was from tungsten concentrates, which had a value of \$20,357,000. Among the principal producers were: United States Vanadium

Company, Riley mine, and Getchell Mines, Inc., Getchell group, Humboldt County; Nevada-Massachusetts Company, Tungsten mines, Pershing County; Nevada Scheelite Company, Leonard mines, Mineral County; Wah Chang Mining Corp., Lincoln mine, Lincoln County; and Gabbs Exploration Company, Victory mine, Nye County. The London Extension Mining Company, Gold Acres mine, Lander County, Nevada's largest lode gold mine in 1954, and the Natomas Company dredge at the Greenan Placers, Lander County, were large contributors to the State's gold production.

The most exciting event of 1954 was the birth of Nevada's first producing oil well, an event that may yet have considerable significance. The search for oil in eastern Nevada had started in September 1920 when the Illipah Petroleum Syndicate spudded in the No. Illipah Anticline well. Three additional wells were drilled in the same area, one in 1920, one in 1926, and another in 1927. Gas and oil shows were reported in all of the wells, but none was ever produced. Current petroleum activity in Nevada began in 1950 with the drilling of the No. 1 Meridian well by Standard Oil Company of California and Continental Oil Company. Two additional wells, No. 1 Hayden Creek and No. 1 Summit Springs, also were drilled by the two companies. Oil shows were encountered in the three wells but none proved productive.

The Gulf Oil Company next became active, drilling a total of seven dry holes during 1953-55. Most of these wells were drilled in Elko County. The Richfield Oil Company also drilled a well in northern Elko County.

On January 11, 1954, the Shell Oil Company spudded in their first test well, the No. 1 Eagle Springs well. This well, completed on May 23, 1954, was placed on production in June 1954 with an initial production of 275 barrels per day. The discovery caused excitement throughout the oil industry, and many millions of acres in eastern Nevada were leased. Unfortunately little drilling activity resulted, and the Eagle Springs oil field remains the only oil field in Nevada.

Continuing a trend begun in 1950, the value of Nevada's

mineral production passed the \$100 million mark for the first time in 1955. In national ratings Nevada ranked first as a producer of tungsten, second in mercury and manganese production, and fourth in copper production. The newly formed Battle Mountain Copper Company purchased the Copper Canyon Mining Company and began production in December. Substantial quantities of Nevada iron ore were mined, mostly for export to Japan, but with some going also to Eastern furnaces and California steel mills. Seven producers in five districts mined nearly 400,000 tons of magnetite and hematite iron ores.

Manganese production continued to grow in 1955, as output increased in spite of a labor strike at Manganese, Inc., near Henderson, chief producer in the State. Manganese nodules were produced from stockpiled ore mined from an open pit developed during the war years, 1942-44. Nevada continued to lead the nation in mine production of tungsten, which increased appreciably over the previous year with 222 individual operations in 201 mining districts spread through 15 of the State's 17 counties.

During 1955 eight oil wells were spudded in while six wells began drilling prior to the beginning of the



Eagle Springs oil field, Nye County. A. S. VanDenburgh photo.

year. Of these wells, two were placed on production, five were abandoned, and seven were still being drilled at the year's end. The two wells nearest the discovery well in the Eagle Springs field were productive, but by the end of the year one was producing and the other was temporarily shut-in.

Another unprecedented dollar value in mineral production was established in 1956 when \$126,681,287 worth of mineral wealth was produced in Nevada. This is a figure not likely to be matched until the late 1960's or early 1970's at the present rate of growth. This 1950 dollar value reflected the increased output of copper aided by a high market price. There was a general advance in production of all commodities except gold and tungsten. Most notable of the increases in production were iron ore, manganese, molybdenum (a byproduct of copper mining), lead and zinc, with silver following the higher lead output. Crude petroleum yield remained virtually on the same level as the previous year.

Normally, gold and silver production follow trends in copper output. This did not hold true for 1956. A drop in production from straight gold-mining operations was caused when the Natomas Company did not reactivate its dredging operations in Lander County. The Bruhi mill at Silver Peak closed in January 1956 but was reopened under new management in July. Iron-ore production increased 200 percent over 1955. Standard Slag Company, with operations in Douglas and Nye Counties, was the largest individual iron-ore producer. Renewed and expanded activity in the Pioche district [347] of Lincoln County by Combined Metals Reduction Company and Bristol Silver Mines Company contributed to increased lead, zinc, and copper output. Clark County led the State in overall production of lead and zinc through ore drawn from the former Metals Reserve Company stockpile at Jean and through lead residues from manganese ores treated by Manganese, Inc. Nevada ranked second, behind California, in the nation's production of mercury. The Cordero mine near McDermitt was the State's as well as the Nation's largest individual producer. Tungsten production during the year remained at a high level. However, the decline in shipments of concentrates reflected the delay in the Government's decision on renewal or extension of the purchase program which terminated in early 1956.

In 1957 a major depression hit much of Nevada's mineral industry, and production slumped 30 percent from the record high of 1956. A declining market price for copper, and termination of the Government Tungsten Purchase Program were responsible for over 97 percent of the total reduction. The major copper companies in Lyon and White Pine Counties

curtailed operations by reducing employment and shortening the work week. The weak market for lead and zinc forced the closing of the major mining operations at Pioche. Tungsten mining had practically ceased by September 1957, and only two properties, one each in Nye and Pershing Counties, were producing on a very limited basis at year's end.

The mineral production decline continued into 1958 when a dollar value of \$68,293,000, lowest since the end of the Korean War, was recorded. A continuing depressed price for copper was responsible for a major portion of the decline. Also, metal prices shut down the last of Nevada's major tungsten mines, forced another lead-zinc mine to close, and caused the lead-zinc producers who had ceased operations in 1957 to remain closed. The only bright spot in the mining picture was the reactivation of placer mining at Round Mountain.

A minor recovery was made in 1959 when production reached \$70,159,000. Continued low prices prohibited operations of many mines, however, and it was evident that it would be many years before lead-zinc and tungsten mining returned to the scene. Manganese was added to the list of retired mineral operations with the ending in August of the Government purchase program for this commodity.

The year 1960 marked the beginning of a period of moderate yearly production increases that promises to continue for many years. There were no Government purchase programs in effect in 1960 to provide a false base for mining gains. Metal prices remained stabilized at low levels, and it was unlikely that they could fall further. The value of mineral production in 1960 was \$80,324,000. The increase over 1959 was due largely to production increases in a strike-free copper industry. Increased iron ore shipments were the result of improved export trade. However, gold production dropped when the Round Mountain placer operation closed, and Nevada's crude petroleum yield continued the decline that began following the high of 1955-56 by dropping more than 15 percent below the 1959 figure.

Mineral production in 1961 had a value of \$81,533,000. There was little change in the operations picture other than in petroleum. Shell Oil Company completed a large producing well in the Eagle Springs field and quadrupled the State's petroleum output for 1961 as compared to 1960. The brighter side of the metals industry in 1961 was the increased activity in exploration, which included the search for copper, lead-silver, antimony, and beryllium ores in White Pine County; copper and iron ores in Lyon County; beryllium and lead-zinc ores in Churchill, Douglas, Ormsby, and Pershing Counties. Also, Getchell Mine, Inc. began development of its gold property in

Humboldt County for open-pit operation. Other activities included the first shipment of copper concentrates by the Anaconda Company from its new sulfide mill at Weed Heights, and a contract for construction of a 500,000-tons-per-year magnetic separation plant to be constructed by Standard Slag Company at the Minnesota iron mine, Douglas County. On the debit side the London Extension Mining Company, the last active straight lode-gold mine in Nevada, suspended operations at its Gold Acres property in Eureka County on March 31.

In 1962 mineral production increased slightly to \$83,700,000. Although production increase was minor, there were several significant developments. In July, Getchell Mine, Inc. began bullion shipments from its new gold ore treatment plant. The Nevada Barth Company took over the operation of iron deposits on Southern Pacific Company land in Pershing County. The Anaconda Company operated its sulfide concentrator at Weed Heights for the full year and reported the purchase of the Mt. Wheeler beryllium deposits, White Pine County. Nevada Scheelite Division, Kennametal Inc., completed a plant at Fallon for refining tungsten carbide produced at its Mineral County operation.

Exploration activity, as in 1961, highlighted 1962. Homestake Mining Company investigated copper showings in the Crescent Peak area, Clark County; Newmont Exploration Ltd. began extensive exploration for gold-silver ore in western Elko County; Callahan Mining Corp. explored a silver-bearing deposit in Esmeralda County; and Siskon Corp. continued exploration of the Gibellini vanadium property south of Eureka. Exploration for gold ore was conducted by Kerr-McGee Oil Industries and Newmont Exploration, Ltd. in the Gold Acres area, and Duval Corp. continued its exploration program for copper in the Copper Canyon - Copper Basin area, Lander County. Lyon County iron deposits were under continuous exploration by Utah Construction and Mining Company and by Columbia Iron Mining Company. American Metal Climax Company explored for molybdenum in an area near Mina. In Nye County, diamond drilling was in progress by The Anaconda Company at the Hall molybdenum property northeast of Tonopah. Many other exploration programs were underway throughout Nevada and it appeared likely that new ore bodies would be discovered.

Production in 1963 of \$84,800,000 again showed a slight increase over the previous year. The increase was credited mainly to gold production from Getchell Mine, Inc., which completed its first full year of uninterrupted operation since conversion to open-pit gold mining. Larger shipments of iron ore from mines in Douglas, Humboldt, and Pershing Counties more

than offset declines at iron properties in Eureka and Lander Counties. A marked increase in the quantity of ore mined from the Mountain View property, Eureka County, accounted for a 75 percent rise in zinc production. Production and shipments of mercury were lower, and several small mines that had produced in 1962 were idle. Tungsten mining remained at a standstill.

Exploration and development work continued to expand. Most of the companies active in 1962 continued exploration in 1963, and new companies entered the picture. Included among the newcomers were Phillips Petroleum Company, Atlas Corp., and Sierra de Oro Mining Company in the Lynn district [277]. Silver State Consolidated Mines Company was developing the old Crown Point mine in the Rochester district [380], Pershing County. Exploration for copper ore was underway by Norlex Mines Ltd. of Toronto, Canada, in Mason Valley (Lyon County) and in Mineral County.

The Texota Oil Company, drilling on a farm-out from the Shell Oil Company, completed another large producing well in the Eagle Springs field. The new well, completed in December, did not have sufficient production by year's end, however, to offset the decline in production of the three older producing wells.

INDUSTRIAL MINERALS

Industrial minerals, or nonmetallic minerals as they are sometimes called, are those minerals mined for their particular chemical or physical qualities rather than for their metal content. They are usually chemical combinations rather than elemental substances.

Industrial mineral production has attained commercial significance in Nevada only during the last twenty to thirty years although some of the materials were of economic importance early in Nevada's mining history. Salt and borax were mined in large amounts during the 1800's. Salt was of extreme importance to the development of the Comstock Lode and other early day mining camps, as the early metallurgical practices required large amounts in the reduction of silver. Salt cost \$150 per ton delivered to the Comstock Lode when purchased in San Francisco. In 1862 a herd of camels was imported for use in hauling salt from Rhodes Marsh [375] in Mineral County to Virginia City. In 1863 the Sand Springs [401] salt deposit, Churchill County, was discovered and was able to supply salt to Virginia City for \$60 per ton. This deposit still produces a small amount each year for use in deicing northern Nevada city streets and highways.

Borax deposits had been found at Salt Wells [401], Churchill County, and Columbus Marsh [100], Esmeralda County, in 1871, but it was on Teel's Marsh [460] that F. M. "Borax" Smith discovered the deposit which gave the United States borax industry its start. Soon thereafter Smith and his brother obtained financial backing and built a borax plant. By 1873 the works at Teel's were bigger than operations at Columbus, Rhodes, and Fish Lake Marshes [168] and soon became the largest in the world. Discoveries of colemanite, an insoluble boron mineral, in 1882 in Southern California and later discoveries of soluble boron salts at Searles Lake ended the Nevada operations.

Gypsum has been mined for many years in Nevada, beginning about 1909 when the Arden Plaster Company started operations near Arden [14], Clark County. This deposit, purchased in 1919 by the U. S. Gypsum Company, operated until the deposit was mined out in 1931. In 1925 the Blue Diamond Corp., Ltd., began mining a second deposit near Arden. This operation continues in operation today, supplying gypsum board and similar products to southwest markets. A second major gypsum operation is located south of Apex [12], Clark County, where the Fiberboard Paper Products Corp. recently began construction of a wallboard plant. The third major gypsum operation in Nevada is located near Gerlach, Washoe County. The Pacific Portland Cement Company began operations here in 1921. The mine and board plant is now owned and operated by U.S. Gypsum Company.

Diatomite deposits have been reported in almost every county in Nevada, although active mining is presently restricted to western Nevada. Three companies mine diatomite in Nevada; The Eagle-Picher Company, the Dicalite Division of the Great Lakes Carbon Corp., and the Aquafil Company. Eagle-Picher operates two mines and mills, one at Clark Station, Storey County, and one near Lovelock, Pershing County. The Celetom mine at Clark Station began regular operations in 1943 and was acquired by Eagle-Picher in 1945. The mine and mill have operated continuously since that time. The Lovelock deposit was first examined in 1953. Following extensive exploration, a mill was erected at Colado, east of Lovelock, and the first production made in September 1958. The Basalt mine of the Dicalite Division, near Basalt, Mineral County, was discovered in 1905. Occasional shipments were made from that time until 1928. Shipments began again in 1940 and greatly increased in 1944 when the Dicalite Division purchased the property. The Aquafil Company has operated a number of quarries in the Fernley area, site of their mill, and is presently mining diatomite in the

Nightingale district. There have been other diatomite mines in Nevada, most notable being the Tri-O-Lite Company mine near Vivian, four miles east of Carlin, Elko County, that operated during the 1920's and early 1930's.

Barite production began in Nevada in 1907 when a small amount of barite was mined at the American Barite mine in Esmeralda County. The Yerington mine in Ormsby County is mentioned as having produced barite in 1907. The Crystal mine in Mineral County was an active producer from 1916 through 1919, and again during the late 1920's and early 1930's. The development of the present Nevada barite industry began during the late 1930's. Most of the production has come from the Battle Mountain - Carl in area of Lander, Eureka, and Elko Counties.

Other industrial minerals presently produced in Nevada include limestone, silica sand, perlite, scoria, and fluorspar. It is likely that industrial minerals will continue a steady growth in production as demands for these minerals increase in California and other adjacent States.



THE FUTURE

In its Centennial year the Nevada mineral industry can look back upon a substantial, although oftentimes erratic, history of economic contribution to Nevada. It was because of mining that Nevada became a State — it was because of mining that Nevada was able to grow during many of the 100 years now celebrated. While the drama of the early boom days has focused attention on the past, the mineral industry has its best days yet ahead.

Recent exploration efforts promise handsome dividends. Among these are: Newmont's announcement of their intention to build a 2000-ton-per-day cyanide mill in the Lynn district [277], Eureka County; published reports concerning the possible operation of the Dayton iron mine by the Utah Construction Company; reports of the discovery of a large iron-copper ore body by the Columbia Iron Mining Company; completion of a large flowing oil well by the Texota Oil Company in the Eagle Springs field; continued exploration of a large molybdenum deposit north of Tonopah, Nye County, by the Anaconda Company; and the rumored discovery of another open-pit copper mine in northern Nevada.

All of these developments, plus others, will add to the continued substantial economic contribution that Nevada's mines and miners make to the Silver State.



A 1968 view of the early developments at the Carlin mine, looking southwest. *Newmont photo.*

AN OUTLINE OF THE MINING HISTORY OF NEVADA, 1965-1992

Written in 1993 by
Joseph V. Tingley



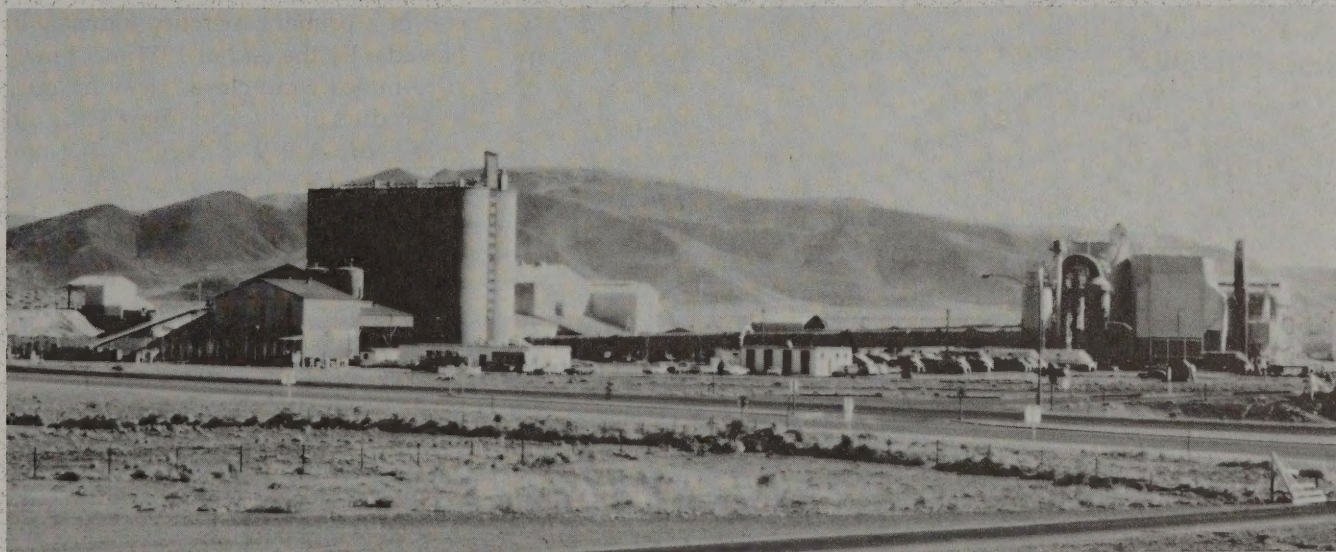
1965-1979, COPPER TO GOLD

The last half of the 1960s and the decade of the 1970s marked a transition in Nevada's mining industry that may prove to be more significant than any event since the discovery of the Comstock Lode.

In 1964, copper was the state's premier mineral commodity, accounting for over 60% of the total mineral production. Sand and gravel production was second in value, and activity in industrial mineral commodities was highlighted by the completion of Nevada's first portland cement facility. This plant, constructed by Nevada Cement Co. near Fernley, began producing portland cement by the end of 1964.

The Pan American lead-zinc mine was under development near Pioche and plans were being made to reopen the Fad shaft at Ruby Hill in Eureka County in hope of exploiting a large body of sulfide silver-lead-zinc-gold ore. Iron was being mined from deposits in Humboldt, Pershing, and Eureka Counties, a large iron deposit was under development near Dayton, and numerous other iron discoveries had been made in Lyon and Mineral Counties. The Getchell mine, operated by Goldfield Corp., was the leading lode gold producer in the state.

In May 1965, Newmont's Carlin mine poured its first gold bar and a new era of precious metals production began; by the end of the year, the Carlin mine was the largest gold producer in Nevada and was



Nevada Cement Co. plant, Lyon County. Keith Papke photo.

second largest in the nation. Base metals, however, maintained a dominant position in the state for the rest of this period. Production of iron ore from Nevada mines exceeded 1 million tons for the first time in 1965, and the Pan American lead-zinc mine began production and reached capacity of 1,500 ton/day that year.

A new mineral commodity for Nevada surfaced in 1966 when Foote Mineral Corp. dedicated its lithium facility at Silver Peak in Esmeralda County and began lithium carbonate production from Clayton Valley brine.

Duval's Copper Basin/Copper Canyon mines near Battle Mountain and the Big Mike mine in Pershing County began copper production in 1967. Copper was

Nevada's major mineral commodity but gold was now in second place. The Cordero mine in Humboldt County, the state's largest mercury mine at that time, yielded its 100,000th flask of mercury in 1967. The closure of the Getchell mine at the end of the year marked another milestone in Nevada's mining history. The operating company, Goldfield Corp., traced its roots to Goldfield and the 1901 precious metals boom. The Getchell deposit, discovered in 1935, was a contributor to the short-lived pre-World War II gold rush.

The decade of the 1960s closed on a record year for mineral production; 1969 production exceeded that of 1956, the previous record year, by \$42 million and Nevada gold production was the highest since 1915. The Cortez gold mine in Lander County, the second of what was becoming known as the "Carlin type" deposit, began operation in 1969, and U.S. Steel Co. located extensive iron/copper deposits in the Pumpkin Hollow area of the Yerington district [526] in Lyon County.

Worldwide tungsten prices began to rise in the early 1970s and tungsten exploration activity revived in Nevada for the first time in about 15 years. A new tungsten discovery at Indian Springs in Elko County showed promise of development into an open-pit operation, and General Electric Co. began an exploration and development program at the old Nevada-Massachusetts property in Pershing County. Nevada's mercury industry, however, did not fare well during this period. Falling mercury prices caused largely by a loss of markets due to environmental concerns led to the virtual end of a primary mercury industry in Nevada. By the end of 1971 most mercury mines were closed, leaving only by-product production from the Carlin gold mine. In 1972, Nevada became the nation's leading gold producer.

An upsurge in oil and gas exploration throughout the world early in the decade created demand for barite well-drilling mud and Nevada's huge barite deposits came into prominence. In 1974, Nevada became the leading barite-producing state in the nation.

Another first for Nevada came in 1974 when Placer Amex brought the large McDermitt mercury mine into operation and the state moved into first place in mercury production. World



Getchell mill, Humboldt County.

mercury prices were still poor, however, and except for Nevada, the U.S. mercury industry was dormant. By 1976, Nevada was supplying 99% of the Nation's mercury production from only two mines; primary mercury from McDermitt and by-product mercury from the Carlin gold mine.

In 1976, Northwest Energy Co. announced discovery of Nevada's second oil field, Trap Spring in Nye County. The Trap Spring field is located southwest of the first oil field, Eagle Springs, discovered in 1954. Unfortunately, 1976 also saw the closure, early in the year, of the Pan American mine near Pioche. The Pan American was Nevada's only operating lead-zinc mine. In 1977, Union Carbide Corp. began tungsten production at its Emerson mine in the Tem Piute district [462] in Lincoln County. The deposit had tungsten reserves to support a 20-year operation. Also in 1977, Freeport Exploration Co. and FMC Corp. announced plans to explore for gold in the Independence Mountains of northern Elko County, an area suspected to contain occurrences similar to the Carlin and Cortez disseminated gold deposits.

Nevada's copper industry plunged from prominence in 1977 and 1978. Copper mining had played an important role in Nevada since before World War I and, since 1940, copper had been Nevada's primary

metal product. Faced with heavy foreign competition, increasing extraction costs, restrictive environmental regulations, and lower demand, Nevada copper production dropped. The end was swift; in 1974 Nevada's copper production exceeded \$130 million, a record for the state. In May 1978 Kennecott Copper Corp. closed its mine and smelter in White Pine County, in July Anaconda Copper Co. ceased copper production at Yerington, and Duval Corp. began phasing out its copper operations at Battle Mountain and began mining gold at the nearby Fortitude deposit. In 1979, copper production is estimated at less than \$1 million.

As copper production fell, however, gold exploration began to pay off in a big way. Gold exploration had dramatically increased in Nevada following the discovery of the Carlin mine in 1962. The major incentive, however, came in 1972 when the price of gold was released from government control and gold was allowed to seek its own level in the world market. By the end of the decade, Freeport Gold Co. was developing gold properties in the Independence Range, Amselco Minerals, Inc. was working at Alligator Ridge in White Pine County, and the Pinson Mining Co. was developing its Pinson and Preble gold deposits in Humboldt County. Smoky Valley Mining



IMCO, Inc. barite grinding plant, Lander County. Keith Papke photo.



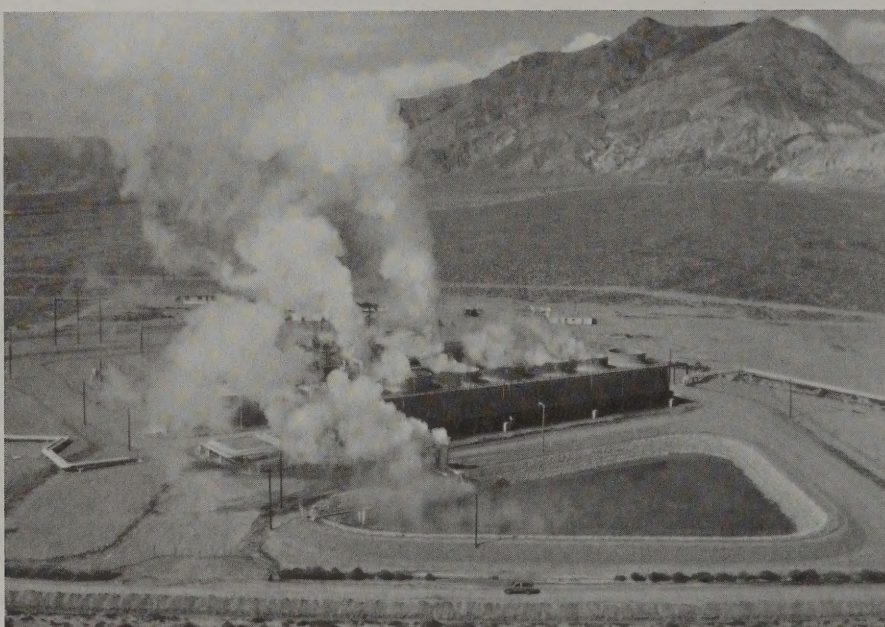
Smoky Valley Mining Co.'s Round Mountain gold mine.
Ertec photo.

Co. put the Round Mountain gold-silver deposit into production in 1977 and, in 1979, Houston Oil and Minerals Co. began stripping and stockpiling ore at its open-pit mine at Gold Hill in the heart of the old Comstock Lode.

Barite production in Nevada reached record levels during the last half of the 1970s. The coincidence of falling copper production, a temporary level period in gold production, and record barite production moved industrial mineral output ahead of metals for the first time in Nevada's history. The event was short-lived, but industrial minerals accounted for over 60% of the

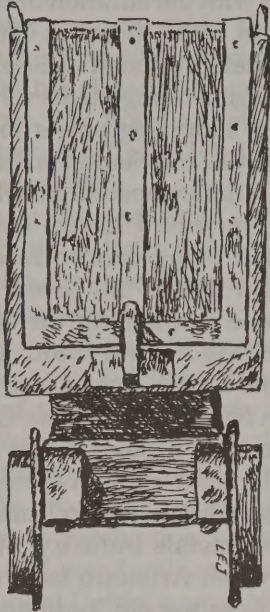
total value of mineral production from Nevada in both 1978 and 1979.

Nevada's geothermal resources received considerable attention during the 1970s. Numerous hot springs in the state have been used over the years for recreational and "curative" purposes as well as for space heating. Drilling for geothermal resources first took place in Nevada between 1959 and 1965 but commercial development did not take place until 1978 when the world's first geothermal food processing plant was placed into operation at Brady's Hot Springs in Churchill County. Hot water from a geothermal



Oxbow Geothermal's power plant in Dixie Valley, Churchill County.
Photo by Dick Benoit, Oxbow Geothermal Corp.

well was used as a source of process heat to dry onions. Rising fossil fuels costs in the mid-1970s drew attention to the geothermal areas as potential sources of energy for use in the generation of electrical power. Geothermal exploration increased throughout Nevada but, at the end of the decade, geothermal power generation was still in the planning stage in Nevada.



1980–1989, THE GOLDEN YEARS

Nevada was the leading gold producing state in the nation in 1972, 1975, and 1977 but in the intervening years dropped to second and, in some years, third place. In 1980, however, Nevada moved into first place and stayed there. The barite boom was still at its height in 1980, and proceeds that year from industrial mineral mining in Nevada were about equal to those from metal mining.

Production began at the Candelaria open-pit silver mine in Mineral County in 1980, and the Taylor open-pit silver mine in White Pine County began operation in 1981. Low worldwide demand for tungsten coupled with market competition from foreign sources led to the closure of Union Carbide Corp.'s Emerson tungsten mine in 1981. General Electric Co. opened its new Springer tungsten mine in 1982 but ceased operation late in the same year. Anaconda Copper Co. brought its Hall molybdenum mine in Nye County into production late in 1981, but weak world markets

for molybdenum forced it to suspend production in 1982.

Kennecott Copper Corp. reopened the McGill copper smelter in 1981 to treat concentrates from its mines in Arizona and New Mexico. In 1983, however, the smelter closed for a final time. Kennecott this same year ceased operations of the Nevada Northern Railway, the company-owned line that extended between the White Pine County mines and Cobre, a point on the Southern Pacific Railroad's transcontinental line about 140 miles to the north. The Nevada Northern was the last short-line railroad operating in Nevada and its closure ended chapters in both railroad and mining history.

Oil exploration in Nevada was encouraged in 1981 when Northwest Exploration announced a favorable drill-stem test in a well at Bacon Flat in Nye County. Amoco followed this in 1982 with the discovery of the Blackburn oil field in Pine Valley in Eureka County, and the discovery of the Grant Canyon oil field in Nye County was announced by Northwest Exploration in 1983. An all-time high in annual footage drilled in search for oil in Nevada was set in 1983 and, in 1985, Grant Canyon No. 3 well in the Grant Canyon field became the leading onshore producer for an individual well in the U.S.

Years of geothermal exploration and development in Nevada began to return dividends in 1984 when a 750-kilowatt geothermal generating plant was placed in operation at Wabuska in Lyon County. In 1985 three more geothermal generating plants went on line. All three of these plants, one in Lander County west of Beowawe Hot Springs, another near Desert Peak in Churchill County, and a third at Steamboat Springs south of Reno, began power generation in December. Total generating capacity was about 25 megawatts, and power from the plants was delivered to Southern California Edison and Sierra Pacific Power Co.

Gold and silver were the premier commodities in the state for all of the 1980–1989 period. In 1983, the value of precious metals production for that one year exceeded the total recorded production of the Comstock Lode. In 1985, Gold Fields Corp. announced discovery of a major gold orebody at Chimney Creek in the Potosi district [351] in Humboldt County and Amax began mining the bonanza Sleeper gold deposit in the Awakening district [25] of Humboldt County. Newmont's Gold Quarry mine in the Maggie Creek district [278] in Eureka County opened in 1986 and FMC Corp. poured the first doré bars at their Paradise Peak gold-silver mine in Nye County. Coeur-Rochester, Inc., a division of Coeur d' Alene Mines Corp., began production at the Rochester silver mine in Pershing

County in August 1986. Precious metals exploration projects were reported to be underway in every county of the state in 1986 and, in that year, more than twice as many mining claims were filed in Nevada as in any other state.

Continuing to break records, Nevada's precious metals production exceeded the \$1 billion figure in 1987 and, only two years later, pushed above \$2 billion in 1989 when a production record of 5 million ounces of gold was achieved. Twelve new gold operations went into production in 1987: Freeport McMoRan Gold Co.'s Big Springs mine in Elko County, Atlas Corp.'s Gold Bar mine in Eureka County, Hycroft Resources and Development Co.'s Lewis mine in Humboldt County, Canyon Resources Corp.'s Haywood-Santiago mine in Lyon County, Nevada Goldfield's Aurora mine in Esmeralda County, and Alta Gold Co.'s Illipah mine in White Pine County. The Dexter mine, operated by Horizon Gold Shares, Inc., at Tuscarora began production in the second half of 1987 and Gold Field Mining Corp.'s Chimney Creek mine was placed in production in December.

St. Joe Gold Corp. announced discovery of a large gold deposit near Rhyolite in the Bullfrog district [65] in Nye County in 1987 and American Barrick Resources Corp. revealed the discovery of rich gold mineralization about 1000 feet below surface at their Goldstrike property in the Lynn district [277] in Eureka County. The latter discovery opened the eyes of mineral exploration groups to the potential for deep gold mineralization associated with "Carlin-type" deposits in other districts. The importance of this concept remains to be fully evaluated, but it could signal the beginning of a new era of underground mining in Nevada.

In 1987 barite production fell 70% from that of 1986, but Nevada still led all other states with 62% of the national production. The McDermitt mine, the state's major mercury mine, temporarily closed in January but by-product mercury produced from the large gold mines maintained Nevada's first place in the production of the metal.

Production of electricity from geothermal resources continued to increase in 1987. In addition to plants at Wabuska, Beowawe, Desert Peak, and Steamboat Springs, geothermal power was being generated at San Emidio in Washoe County and Soda Lake in Churchill County.

Also in 1987, Nevada became the nation's leading silver producer for the first time since the Comstock era and, in 1988, the Rochester mine, of Coeur-Rochester, Inc., became the largest silver producer in the United States.

Ten new gold mines opened during 1988 and Nevada continued to lead the nation in the production of gold, barite, silver, and mercury. Included in the list of new mines were Newmont's Rain mine in the Piñon Range in Elko County, Homestake Mining Co.'s Wood Gulch mine in the northern Independence Range in Elko County, Corona Gold Inc.'s Santa Fe mine in Mineral County, and USMX's Green Springs mine in White Pine County. U.S. Borax & Chemical Corp.'s Trinity silver mine in Pershing County also began production in 1988.

Nevada's geothermal generating capacity increased threefold in 1988 with the addition of two plants, a 60-megawatt plant in Dixie Valley in Churchill County, and a second generating plant at Steamboat Springs. Eight geothermal generating plants were now in operation in the state, supplying power to both Southern California Edison Co. and Sierra Pacific Power Co.

Five new gold mines opened in 1989 and Nevada gold production increased for the tenth consecutive year. Rather than being concentrated in northern Nevada's "Carlin trend," however, the 1989 mine crop was scattered throughout the state. Important new mines included Bond Gold Bullfrog Inc.'s Bullfrog mine and GEXA Gold Corp.'s Mother Lode mine in southern Nye County, Amax Gold Inc.'s Wind Mountain mine in Washoe County, and Rayrock Yellowknife's Marigold mine in the northern part of the Battle Mountain district [31] in Humboldt County.

Nevada's base metals industry showed signs of revival in 1989 when Arimetco began production of cathode copper from the old Yerington copper mine, and Cyprus Minerals Co. resumed operation of the Hall molybdenum mine north of Tonopah. The Ward Mountain zinc-copper-lead-silver mine in White Pine County also began mining ore during the second quarter of the year. A geothermal generating plant at Stillwater in Churchill County came on line in 1989, increasing the state's capacity by 13 megawatts. The discovery of a major deposit of wollastonite in the Gilbert district [183] in Esmeralda County was announced in 1989. Wollastonite, in demand as a reinforcing filler and an asbestos substitute, has never been mined in Nevada. The Gilbert deposit is said to contain substantial reserves of ore containing more than 50% wollastonite and could form the basis for a new non-metallic industry for Nevada.



1990-and beyond

In 1990, for the eleventh straight year, the record for annual production of gold was broken in the state;

gold accounted for 85% of Nevada's mineral production. Nevada produced 61% of the nation's gold and accounted for 8% of the total world gold production.

Seven major gold discoveries were reported in 1990 and 10 new deposits were brought into production including Ivanhoe Gold Co.'s Hollister mine in Elko County, Santa Fe Pacific Gold Corp.'s Rabbit Creek mine in Humboldt County, and Kennecott Corp.'s Denton-Rawhide mine in the historic Rawhide district [365] in Mineral County. The Candelaria mine in Mineral County, operated by Nerco Metals, Inc., poured its 20-millionth ounce of silver in February but closed late in the year due to low silver prices.

The McDermitt mercury mine, the nation's major source of mercury since 1975, produced its 300,000th flask in July 1990, but closed in November due to poor market conditions. The Ward Mountain mine and the Cyprus Tonopah (Hall) molybdenum mine also closed by the end of 1990.

Magma Copper Co. and Alta Gold Co. purchased the Robinson mining district [378] from Kennecott Corp. in 1990 and announced plans to resume copper mining and milling operations.

The Tomera oil field was discovered in Pine Valley in Eureka County in 1990 and two other new oil fields, Three Bar in Eureka County and Duckwater Creek in Nye County, began production, bringing the number of producing fields in the state to ten. In contrast to declining production in the rest of the United States, Nevada oil production increased 25% from 1989 to 1990, to just over 4 million barrels.

In 1991 Newmont Gold Co. poured its 10-millionth ounce of gold from mines on the Carlin trend. Gold Quarry, one of the Newmont mines, produced 1,034,500 ounces in 1991, becoming the first mine in North America to produce 1 million ounces of gold in a single year. Gold production at Santa Fe Pacific's Lone Tree mine in Humboldt County, began in August. Major gold discoveries announced during 1991 were the Pipeline deposit east of the old Gold Acres mine in Lander County and the Rosebud deposit in Pershing County.

Gold continued as Nevada's most valuable commodity through 1992. Gold production in 1992 set a new production record of over 6.5 million ounces, accounting for more than 85% of the state's total non-fuel value, and the state maintained its position as the leading producer of gold, silver, mercury, and barite in the United States.

The copper industry in Nevada continued to show signs of renewal in 1992. Magma Copper Co. was laying plans to begin mining at its Robinson copper-gold mine at Ruth in White Pine County. Construction of a

35,000-ton per day mill at the site of old Reipetown is scheduled to begin during 1993 and mining may start in 1994. Over its projected 16-year mining life, the new phase of copper mining in White Pine County is projected to yield approximately 2.5 billion pounds of copper and 1.2 million ounces of gold. At Yerington, Arimetco International Inc. produced 37,000 pounds of cathode copper per day from the Yerington mine in 1992. Arimetco announced plans to place the nearby MacArthur copper property into production.

Nevada's mineral industry beyond 1992 shows signs of significant changes, not in relative importance to the state's economy, but in direction. Copper mining appears to be on the verge of a comeback. If projects planned for two of the state's major copper districts come to pass, and if other of the known copper resources in the state are developed, copper could return to its place as one of Nevada's prime commodities.

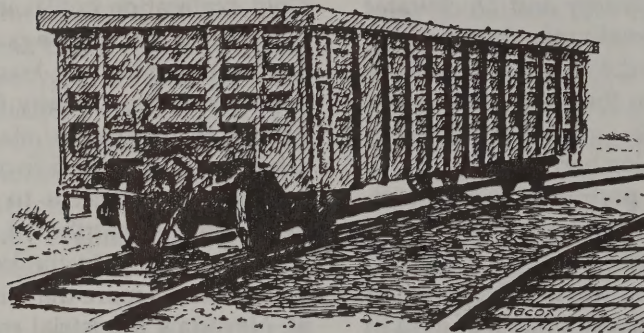
Nevada's gold production makes the United States the second leading gold producing nation in the world, and published Nevada gold reserves at the end of 1992 total about 138 million ounces. Some of these may prove to be subeconomic and may never be mined, but reserves probably are sufficient to sustain the gold mining industry for at least another 20 years. Gold exploration in Nevada in 1992, however, continued a decline that began about 1989; a decline in exploration can only lead to an eventual decline in gold production. Many factors including low gold prices, an increase of state and federal regulations affecting mining, and increased uncertainty concerning long-term access to federal lands for mineral development contributed to the decline. These negative factors may, in the long term, affect the production of metals more than industrial minerals. In general, Nevada's industrial mineral output has shown a steady annual increase since about 1940 and has sharply increased since about 1970. As Nevada's population increases, demand for such materials as limestone for cement production, building stone, and sand and gravel for construction must also increase. These are low unit-value commodities, sensitive to transportation costs, and deposits will be sought and developed as needed close to major population centers of the state. The production of industrial minerals, therefore, is expected to continue on a steady upward trend.

Nevada's geothermal resources are also expected to increase in importance to the state's mineral economy. Geothermal electric power sales have risen from a zero point in 1984 to an \$85 million industry in 1992. In 1993, Nevada is expected to exceed 200 megawatts of geothermal power production capacity, and at least

three additional facilities are planned which would almost double this figure.

BIBLIOGRAPHY

- Angel, M., ed., 1881, History of Nevada, with illustrations and biographical sketches of its prominent men and pioneers: Oakland, California, Thompson and West, 680 p. (reprinted 1958 by Howell-North, Berkeley, California).
- Coope, J. A., 1991, Carlin trend exploration history: discovery of the Carlin deposit: Nevada Bureau of Mines and Geology Special Publication 13, 16 p.
- Davis, S. P., ed., 1913, The history of Nevada: Reno, Nevada and Los Angeles, California, v. I and II, 1279 p. (reprinted by Nevada Publications, Las Vegas, Nevada).
- Hulse, J. W., 1981, The Nevada adventure, a history (5th ed.): Reno, University of Nevada Press, 307 p.
- Lincoln, F. C., 1924, An outline of the mining history of the state of Nevada (1855-1923): Nevada Newsletter and Advertiser, v. 19, no. 5, April 5, 1924.
- Lincoln, F. C., and Horton, R. C., 1964, Outline of Nevada mining history: Nevada Bureau of Mines and Geology Report 7, 27 p.
- Morrissey, F. R., 1968, Turquoise deposits of Nevada: Nevada Bureau of Mines and Geology Report 17, 30 p.
- Tingley, J. V., 1992, Mining districts of Nevada: Nevada Bureau of Mines and Geology Report 47, 124 p.
- U.S. Bureau of the Census, 1975, Historical statistics of the United States, colonial times to 1970: Washington, D.C., U.S. Bureau of the Census, bicentennial edition, part 2, p. 210-211.
- U.S. Bureau of Mines, 1993, Metal prices in the United States through 1991: U.S. Bureau of Mines special publication, 201 p.



INDEX

- aboriginal mining, 11
- Act of 1866, 14
- Alligator Ridge, 39
- American Indian mining activity, 9
- American Indians, 3
- Anasazi, 3
- Arden, 35
- Arentz, Albert, 16
- Arentz siphon tap, 16
- Argenta, Montana, 16
- Atchison, Topeka and Santa Fe R. R., 21
- Atwood, Melville, 12
- Aurora, 12
- Austin, 14, 16, 18
- Bacon Flat, 41
- Barnwell and Searchlight R. R., 21
- Basalt, 35
- Battle Mountain, 18, 38, 39
- Battle Mountain - Carlin area, 35
- Beard Brothers, 16
- Beatie, H.S., 12
- Beatty, 3
- Belmont, 14
- Beowawe, 42
- Beowawe Hot Springs, 41
- Blackburn, Abner, 12
- Blair Junction, 21
- Bland-Allison Act, 18
- Boulder City, 3
- Bourne, D. C., 22
- Brady's Hot Springs, 40
- Braley, 12
- Brougher, H. C., 22
- Brougher, Wilse, 19
- Bruhi mill, 33
- Bullfrog Goldfield R. R., 21
- Bullionville, 16
- Bunkerville, 8
- Bunyard, 16
- Butler, James L., 19
- Cabeza de Vaca, 8
- camels, 34
- Carlin, 25, 35
- Carlin boom, 8
- Carlin discovery, 8
- Carlin gold deposit, 8, 39
- Carlin type deposit, 8, 38, 42
- Carson and Colorado Branch, 21
- Carson and Colorado R. R., 18, 21
- Carson City, 18
- Carson River, 3
- Carson Sink, 3
- Carson Valley, 12
- Casleton, 29, 31
- Casleton flotation mill, 31
- Central Pacific R. R., 18, 21
- Civil War, 12, 14
- Clark Station, 35
- Clayton Valley brine, 38
- Clovis points, 3
- Cobre, 21, 41
- Colado, 35
- Comstock boom, 8, 9
- Comstock discovery, 3
- Comstock era, 8, 9
- Comstock Lode, 9, 12, 18, 30, 34, 37, 40, 41
- Comstock ores, 12
- Comstock, H.T.P., 12
- Corey, 12
- Cortez gold deposit, 8, 39
- Counties
 - Churchill, 14, 19, 33, 34, 35, 40, 41, 42
 - Clark, 3, 8, 9, 11, 12, 22, 27, 29, 30, 33, 34, 35
 - Douglas, 14, 33, 34
 - Elko, 8, 16, 25, 27, 32, 34, 35, 38, 39, 42, 43
 - Esmeralda, 8, 12, 14, 16, 22, 25, 26, 27, 34, 35, 38, 42
 - Eureka, 8, 16, 27, 34, 35, 37, 41, 42, 43
 - Humboldt, 8, 14, 16, 21, 22, 27, 29, 30, 31, 32, 34, 37, 38, 39, 41, 42, 43
 - Lake, 14
 - Lander, 8, 14, 16, 29, 32, 33, 34, 35, 38, 41, 43
 - Lincoln, 3, 14, 22, 25, 26, 31, 32, 33, 39
 - Lyon, 14, 26, 31, 33, 34, 37, 38, 41, 42, 43
 - Mineral, 12, 16, 19, 22, 25, 29, 32, 34, 35, 37, 41, 42, 43
 - Nye, 8, 14, 16, 19, 26, 29, 32, 33, 34, 35, 39, 41, 42, 43
 - Ormsby, 14, 33, 35
 - Pershing, 8, 21, 22, 25, 29, 32, 33, 34, 35, 37, 38, 41, 42, 43
 - Roop, 14
 - Storey, 14, 35
 - Washoe, 14, 35, 41, 42
 - White Pine, 3, 8, 14, 26, 27, 29, 33, 34, 39, 41, 42, 43
- Crescent Peak, 3
- Crystal Springs, 14
- Custom mills, 29
- Dayton, 3, 12, 37
- Deidesheimer, Philip, 12
- Delamar, Captain, 18
- depression-era boom, 8
- Deseret, 12
- Desert Peak, 41, 42
- Dixie Valley, 42
- dragline dredge, world's largest, 29
- Ely, 9, 21, 26, 31
- Ely, J. H., 16
- Eureka, 16, 18, 25, 34
- Eureka Nevada R. R., 18
- Fad shaft, 37
- Fairview, 19, 25
- Fallon, 34
- Fennimore, James, 12
- Fernley, 37
- first silver-lead smelter, United States, 16
- Franciscan, 8, 11
- Galena, 16
- Garcés, Francisco, 8, 12
- Genoa, 12
- Gerlach, 35
- Getchell deposit, 8, 38
- Gibellini vanadium property, 34
- Gilbert gold discovery, 25
- Golconda, 29
- Gold Acres gold deposit, 8
- Gold Canyon, 12
- Gold Hill, 12
- Gold Hill miners, 12
- Gold Point, 29
- Goldfield, 19, 21, 25, 38
- Goldfield rush, 19, 22
- Gordon, L. D., 19
- Grass Valley, California, 12
- Grundy, Isaac, 12
- Hamblin, William, 16
- Hamilton, 14
- Hart, R. C., 19
- Haven, P.A., 14
- Hawthorne, 18, 22
- Henderson, 30, 32
- Henderson plant, 30
- Hicks, 12
- Hiko, 14, 16
- Hoffman, C. E., 16
- Humboldt Range, 14
- Humboldt rush, 14
- Humphrey, John C., 19
- Hunt, S. F., 27
- Independence Range, 39, 42
- Indian Springs, 38
- Indian turquoise mining and processing, 3
- invisible gold, 8
- Ione, 14
- Israel, 16
- Jackson, R. D., 21
- Jean, 33
- Johnstown, 12
- Kimberly pit, 31
- Korean armistice, 31
- Korean War, 30, 31, 33
- Lake Mead, 3
- Lakeview, Oregon, 18
- Las Vegas, 8, 10, 12, 16, 22, 30
- Las Vegas Mormon Mission, 8
- Las Vegas way station, 12
- Leathers, Albert, 14
- Leavitt, Dudd, 12
- Lincoln, Abraham, 12
- Los Angeles and Salt Lake R. R., 21
- Los Angeles, California, 8, 12
- Lovelock, 9, 22, 35
- Lovelock, George, 16
- Ludlow, 21
- Ludwig, 21
- Luning, 21
- MacArthur copper property, 43
- Manhattan, 19
- Marsh, William, 19
- Mason, 21
- Mason Valley, 26, 34
- McDermitt, 33
- McGill, 21
- McGill smelter, 21, 41
- McLaughlin, Patrick, 12
- McNutt, 16
- Mexican miners, 8
- Mexican patio process, 12
- Meyers, A. D., 19
- Mina, 25, 34
- Mines
 - Alta, 26
 - American Barite, 35
 - Andes, 26
 - Aurora, 42
 - B & B, 26
 - Basalt, 35
 - Belcher, 26
 - Best and Belcher, 26
 - Big Mike, 38
 - Big Springs, 42
 - Black Diablo, 29
 - Black Rock, 29
 - Bullfrog, 42
 - Caledonia, 26
 - Candelaria, 41, 43
 - Carlin, 37, 38, 39
 - Castle Peak, 26
 - Celestom, 35
 - Challenge, 26
 - Cherry Creek, 14
 - Chimney Creek, 41, 42
 - Combination lode, 19
 - Confidence, 26
 - Copper Basin, 34, 38
 - Copper Canyon, 34, 38
 - Cordero, 29, 31, 33, 38
 - Cortez, 38
 - Crown Point, 26, 34
 - Crystal, 35
 - Cyprus Tonopah (Hall), 43
 - Dayton, 35
 - Delamar, 18, 21
 - Denton-Rawhide, 43
 - Dexter, 42
 - Emerson, 39, 41
 - Everitt, 29
 - Fortitude, 39
 - Getchell, 8, 30, 32, 37, 38
 - Gilbert, 42
 - Gold Acres, 8, 32, 34, 43
 - Gold Bar, 42
 - Gold Hill, 40
 - Gold Quarry, 41, 43
 - Goldstrike, 42
 - Gould and Curry, 26
 - Green Springs, 42
 - Greenan Placers, 32
 - Hale, 26
 - Hall, 34, 41, 42
 - Haywood-Santiago, 42
 - Hidden Treasure, 14
 - Hollister, 43
 - Illipah, 42
 - Johnstown placers, 16
 - Juniper, 26
 - Kentuck, 26
 - Lady Washington, 26
 - Leonard, 29, 32
 - Lewis, 42
 - Lincoln, 32
 - Little Giant, 16
 - Lone Tree, 43
 - Ludwig, 21
 - M.G.L., 29
 - Marigold, 42
 - McDermitt, 38, 39, 42, 43
 - Minnesota, 34
 - Montezuma, 16
 - Mother Lode, 42
 - Mountain View, 34
 - Nevada Douglas, 21
 - Nevada Hills, 19
 - Nevada-Massachusetts, 38
 - Nevada Scheelite, 30
 - Nevada Wonder, 19
 - New York, 26
 - North Mines, 8
 - Northern Belle, 16
 - Northumberland, 8
 - Ophir, 12
 - Oriole, 29
 - Overman, 26
 - Palmetto, 16
 - Pan American, 37, 38, 39
 - Paradise Peak, 41
 - Pershing, 26
 - Pinson, 39
 - Potosi, 8, 12, 22, 25
 - Preble, 39
 - Rabbit Creek, 43
 - Rain, 42
 - Red Rock, 26
 - Riley, 30, 32
 - Rio Tinto, 27
 - Robinson, 43
 - Rochester, 41, 42
 - Round Mountain, 26, 40
 - Round Mountain placer, 33
 - Santa Fe, 42
 - Savage, 26
 - Scheelite Chief, 29
 - Silver Bell, 29
 - Sleeper, 41
 - Springer, 41
 - Standard, 8
 - Taylor, 41
 - Three Kids, 29
 - Tonopah Divide, 22
 - Tonopah Extension, 26
 - Treasure Hill, 14
 - Tri-O-Lite, 35
 - Trinity, 42
 - Tungsten, 32
 - Tybo, 27
 - Victory, 32
 - Ward Mountain, 42, 43
 - Weepah, 26
 - West End Consolidated, 26
 - Wind Mountain, 42
 - Wood, 11
 - Wood Gulch, 42
 - Yellow Jacket, 26
 - Yellow Pine, 22
 - Yerington, 35, 42, 43
- Mining Companies
 - Alta Gold Co., 42, 43
 - Amex Gold, Inc., 41, 42
 - American Barrick Resources Corp., 42
 - American Metal Climax Co., 34
 - Amselco Minerals, Inc., 39
 - Anaconda Co., 31, 34, 35, 39, 41
 - Aquafil Co., 35
 - Arden Plaster Co., 35
 - Arimetco International, Inc., 42, 43
 - Arizona Comstock Mining Corp., 27
 - Atlas Corp., 34, 42
 - Basic Magnesium, 30
 - Battle Mountain Copper Co., 32
 - Blue Diamond Corp., Ltd., 35
 - Bond Gold Bullfrog Inc., 42
 - Bradshaw Syndicate, Inc., 26, 27, 29
 - Bristol Silver Mines Co., 33
 - Buckhorn Mining Co., 27
 - Caliente Cyaniding Co., 29
 - Callahan Mining Corp., 34
 - Canyon Resources Corp., 42
 - Cherry Creek Tungsten Corp., 30
 - Coeur d'Alene Mines Corp., 41
 - Coeur-Rochester, Inc., 41, 42
 - Columbia Iron Mining Co., 34, 35
 - Combined Metals Reduction Co., 29, 30, 31, 33
 - Comstock Co., 26

INDEX (continued)

Mining Companies (continued)

Comstock Merger Mines, Inc., 26
Comstock Tunnel and Drainage Co., 26
Consolidated Coppermines Corp., 27, 31
Copper Canyon Mining Co., 32
Corona Gold Inc., 42
Cyprus Minerals Co., 42
Dayton Dredging Co., 29
Dicalite Division, 35
Divide companies, 22
Duval Corp., 34, 38, 39
Eagle-Picher Co., 35
Eastern Exploration Co., 27
Elkoro Mines Co., 27
Fiberboard Paper Products Corp., 35
FMC Corp., 39, 41
Foote Mineral Corp., 38
Freeport Exploration Co., 39
Freeport Gold Co., 39
Freeport McMoRan Gold Co., 42
Gabbs Exploration Co., 30, 32
General Electric Co., 38, 41
Getchell Mine, Inc., 27, 29, 30, 32, 33, 34
GEXA Gold Corp., 42
Gold Fields Corp., 41, 42
Gold Hill Development Co., 26, 27
Goldfield Consolidated Mines Co., 19, 26
Goldfield Corp., 37, 38
Goldfield Deep Mines Co., 25, 27
Great Lakes Carbon Corp., 35
Homestake Mining Co., 34, 42
Horizon Gold Shares, Inc., 42
Houston Oil and Minerals Co., 40
Hycroft Resources and Development Co., 42
International Mining and Smelting Co., 27
Ivanhoe Gold Co., 43
Kennametal Inc., 34
Kennecott Corp., 27, 31, 39, 41, 43
Kerr-McGee Oil Industries, 34
Lindsay Mining Co., 30
London Extension Mining Co., 32, 34
Magma Copper Co., 43
Manganese Mining Co., 29
Manganese Ore Co., 29
Manganese, Inc., 32, 33
Manhattan Gold Dredging Co., 29
Manhattan Gold Dredging Co., 29
Meadow Valley Mining Co., 16
Metals Reserve Co., 33
M.G.L. Mining Corp., 29
Mountain City Copper Co., 27
Natomas Co., 32, 33
Nerco Metals, Inc., 43
Nevada Barth Co., 34
Nevada Cement Co., 37
Nevada Consolidated Copper Co., 27
Nevada Consolidated Copper Corp., 27
Nevada Goldfields, 42
Nevada-Massachusetts Co., 29, 30, 32
Nevada Porphyry Gold Mines, Inc., 26, 27
Nevada Scheelite Division, 34
Nevada Scheelite, Inc., 29, 30, 32
Newmont Exploration, Ltd., 34
Newmont Gold Co., 35, 37, 41, 42, 43
Norlex Mines Ltd., 34
Northumberland Mining Co., 27
Pacific Portland Cement Co., 35
Phillips Petroleum Co., 34
Pinson Mining Co., 39
Pioche Manganese Co., 31
Pioche Mines Consolidated, 27
Placer Amex, 38
Rare Metals Corp., 30
Raymond and Ely Mining Co., 16
Rayrock Yellowknife, 42
Santa Fe Pacific Gold Corp., 43
Seven Troughs Gold Mines Co., 26
Sierra de Oro Mining Co., 34
Silver State Consolidated Mines Co., 34
Siskon Corp., 34
Smoky Valley Mining Co., 40
Southern Pacific Co., 34
St. Joe Gold Corp., 42
Standard Slag Co., 33, 34
Summit King Mines, Ltd., 29, 30
Sutro Tunnel Coalition, Inc., 26
Tonopah Belmont Mining Co., 26
Tonopah Mining Co., 19, 26
Treadwell-Yukon Company, Ltd., 26, 27
Tri-O-Lite Co., 35
Tungsten Metals Corp., 29
U.S. Borax & Chemical Corp., 42
U.S. Gypsum Co., 35
U.S. Steel Co., 38
Union Carbide Corp., 39, 41
United States Vanadium Corp., 30, 32
USMX, 42
Utah Construction and Mining Co., 34, 35
Wah Chang Mining Corp., 32
Weepah Nevada Mining Co., 27

Mining Districts

Antelope Springs, 26
Apex, 35
Arden, 35
Awakening, 41
Bare Mountain, 42
Battle Mountain, 16, 27, 42
Belmont, 14
Bottle Creek, 29
Buckhorn, 27
Buena Vista, 14
Bullfrog, 42
Candelaria, 16
Carlin trend, 8, 42, 43

Castle Peak, 26
Chalk Mountain, 25
Charleston, 8
Cherry Creek, 14
Columbus Marsh, 35
Comstock, 3, 8, 12, 18, 26, 27
Cortez, 14
Crescent, 11, 27, 34
Divide, 22, 27
Eldorado Canyon, 27
Ely, 21, 27
Esmeralda, 12, 22
Eureka, 16
Fairview, 19
Ferguson, 18, 29
Fish Lake Marsh, 35
Fish Lake Valley, 26
Gabbs, 29
Gilbert, 25, 42
Gold Basin, 25
Gold Circle, 21
Goldfield, 19, 22, 27, 29
Goodsprings, 8
Humboldt, 14
Independence Mountains, 39
Jarbridge, 22, 27
Lynn, 35, 42
Maggie Creek, 41
Manhattan, 19, 27, 29
Meadow Valley, 16
Mineral Hill, 16
Mountain City, 27
National, 21
Nightingale, 35
Pahrangat, 3, 14, 16
Palmetto, 16
Paradise Valley, 16
Pine Grove, 16
Pioche, 3, 16, 27, 33
Potosi, 27, 41
Quartz Mountain, 25
Rawhide, 19, 21, 43
Red Mountain, 14
Reese River, 14
Rhodes Marsh, 34, 35
Robinson, 3, 43
Rochester, 22
Round Mountain, 19, 27
Salt Wells, 35
Sand Springs, 34
Santa Fe, 21, 22
Searchlight, 18, 21, 27
Seven Troughs, 21
Silver City, 27
Silver Peak, 14, 27
Star, 14
Teel's Marsh, 35
Tem Piute, 39
Tonopah, 8, 19, 21, 22, 27
Trinity, 16
Tule Canyon, 8
Tuscarora, 16
Tybo, 16, 26, 27
Union, 14
Weepah, 26, 27
White Pine, 3, 14
Wonder, 19
Yellow Pine, 12, 22, 25
Yerington, 21, 22, 38

Missouri River, 8
Mormon furnace, 16
Morris-Brooks pit, 31
Mound House, 18
Mountain City, 9
Nelson, 29
Nenzel, Joseph, 22
Nevada-California-Oregon R. R., 18
Nevada Central R. R., 18
Nevada Copper Belt R. R., 21
Nevada Northern R. R., 21, 41
Nevada system of mine timbering, 12
Nightingale Mountains, 25
Northumberland gold deposit, 8
Nye, James W., 14
Oddie, Tasker L., 19
Oil companies, fields, wells
Amoco, 41
Blackburn field, 41
Continental Oil Co., 32
Duckwater Creek field, 43
Eagle Springs field, 32, 33, 34, 35, 39
Grant Canyon field, 41
Grant Canyon No. 3 well, 41
Gulf Oil Co., 32
Illipah Petroleum Syndicate, 32
Nevada oil production, 43
No. 1 Eagle Springs well, 32
No. 1 Hayden Creek well, 32
No. 1 Illipah Anticline well, 32
No. 1 Meridian well, 32
No. 1 Summit Springs well, 32
Northwest Energy Co., 39
Northwest Exploration, 41
Richfield Oil Co., 32
Shell Oil Co., 32, 33, 34
Standard Oil Co. of California, 32
Texota Oil Co., 34, 35
Three Bar field, 43
Tomera field, 43
Trap Spring field, 39
Old Virginia, 12
Ophir bonanza, 12
Ophir miners, 12
Order L-208, 29, 30

Oreana, 16
O'Riley, Peter, 12
Pacific coast, 14
Pahute Indians, 16
Palisade, 18
Paul, A.B., 12
Pine Valley, 41, 43
Piñon Range, 42
Pioche, 9, 14, 16, 25, 33, 37
Pioche, F. L. A., 16
Pipeline deposit, 43
Pittman Act, 22, 23
Placerville, 14
Placerville route, 14
Premium Price Plan, 30
Promontory, Utah, 18
Pumpkin Hollow, 38
Raymond, W. H., 14, 16
Reese River process, 14
Reipetown, 43
Reno, 10, 18, 41
Rhyolite, 21, 42
Rio Tinto ore body, 27
Robbins, Col. G. C., 16
Rochelle, 22
Rosebud deposit, 43
Round Mountain, 26, 33
Ruby Hill, 37
Runge, 22
Ruth, 31, 43
Ruth pit, 31
Ruth pit extension, 31
Salt Lake City, 8, 14
San Bernardino, 12
San Emidio, 42
San Francisco, 14, 34
San Francisco Stock and Exchange Board, 14
Santa Fe line, 21
Santa Fe, New Mexico, 8, 12
Searles Lake, 35
Serra, Junipero, 8
Sherman Act, 18
Shoshone Range, 14
Sierra Pacific Power Co., 41, 42
Silver City, 21, 27, 29
Silver Peak, 33, 38
Silver Peak R. R., 21
Six-Mile Canyon, 12
Slade, 12
smelting plant, first erected in Nevada, 16
Smith, F. M., 35
Soda Lake, 42
Southern California Edison Co., 41, 42
Southern Pacific R. R., 21, 41
Spanish mines, 9
Spanish mining, 8
Spanish trail, 8, 12
Spring Mountains, 8
square set system of mine timbering, 12
St. Thomas, 3
Standard gold deposit, 8
Steamboat Springs, 41, 42
Stewart, William M., 14
Stillwater, 42
Stimmler, Harry, 19
Straight, C. L., 14
Stroud, J. L., 19
Talcott, William, 14
Territory of Nevada, 14
Territory of Utah, 12
Thompson smelter, 26
Tonopah, 3, 19, 21, 23, 25, 34, 35, 42
Tonopah and Goldfield R. R., 21
Tonopah and Tidewater R. R., 21
Tonopah boom, 14
Tonopah-Goldfield boom, 8
Tonopah-Goldfield period, 9
Toronto, Canada, 34
Toulon, 29, 30
Treasure Hill, 14
Truman, Harry S., 30
Tungsten, 25, 29, 30
Tungsten Purchase Program, 33
Tuscarora, 42
Union Pacific R. R., 18, 21
Vanderburg, W. O., 8
Veteran pit, 31
Virgin River, 8
Virginia and Truckee R. R., 18
Virginia City, 12, 14, 18, 34
Virginia Range, 3
Vivian, 35
Wabaska, 21, 41, 42
Wabaska smelter, 21
War Production Board, 29, 30
Washoe pan amalgamation, 12, 14
Washoe rush, 12, 14
Washoe Valley, 3
Weed Heights, 34
Weepah boom, 26
Western Pacific R. R., 21
Westgate, 29
Westville, 25
White Pine rush, 14
Wilson, William, 16
Winnemucca, 9
Wonder, 19, 25
Workman, J. L., 21
World War I, 9, 22, 23, 25, 39
World War II, 27, 30, 31
Yerington, 9, 21, 26, 43
Yerington pit, 31
Yerington project, 31

KEY TO NUMBERS ON PLATE 1.

District—County	
1	Acoma—Lincoln
2	Alder—Elko
3	Alkali Spring Valley—Esmeralda
4	Alpha—Eureka
5	Alpine—Churchill
6	Alum—Esmeralda
7	Alunite—Clark
8	Antelope—Eureka
9	Antelope—Pershing
10	Antelope Springs—Nye
11	Antelope Springs—Pershing
12	Apex—Clark
13	Arabia—Pershing
14	Arden—Clark
15	Argenta Lander
16	Arrow Canyon Range—Clark
17	Arrowhead—Nye
18	Ash Meadows—Nye
19	Ashby—Mineral
20	Aspen—Lander, Churchill
21	Athens—Nye
22	Atlanta—Lincoln
23	Aura—Elko
24	Aurora—Mineral
25	Awakening—Humboldt
26	Bald Mountain—White Pine
27	Barcelona—Nye
28	Bare Mountain—Nye
29	Basalt—Mineral, Esmeralda
30	Bateman Canyon—Lander
31	Battle Mountain—Lander, Humboldt
32	Beaver—Elko
33	Bell—Mineral
34	Bell Mountain—Churchill
35	Bellehelen—Nye
36	Belmont Nye
37	Benway—Lyon, Mineral
38	Beowawe—Eureka
39	Bernice—Churchill
40	Big Creek—Lander
41	Birch Creek—Lander
42	Black Diablo—Pershing, Humboldt
43	Black Horse—Esmeralda, Mineral
44	Black Horse—White Pine
45	Black Knob—Pershing
46	Black Mountain—Elko
47	Black Mountains—Clark
48	Black Rock—Humboldt
49	Black Spring—Nye
50	Blue Wing—Pershing
51	Bootstrap—Elko
52	Borealis—Mineral
53	Bottle Creek—Humboldt
54	Boyd—Lincoln
55	Bristol—Lincoln
56	Broken Hills—Mineral, Churchill, Nye
57	Bruner—Nye
58	Buckhorn—Eureka
59	Buckley Mineral
60	Buckskin—Douglas, Lyon
61	Buena Vista—Esmeralda, Mineral
62	Buena Vista—Pershing
63	Buffalo Mountain—Humboldt, Pershing
64	Buffalo Valley—Lander
65	Bullfrog—Nye
66	Bullion Lander
67	Bunkerville—Clark
68	Burner—Elko
69	Butte Valley—White Pine
70	Butterfield Marsh—Nye
71	Cactus Springs—Nye
72	Calico Hills—Mineral
73	Calico Hills—Nye
74	Callaghan Ranch Lander
75	Camp Gregory—Churchill
76	Candelaria—Mineral, Esmeralda
77	Carico Lake—Lander
78	Carlin—Elko, Eureka
79	Carson City—Carson City
80	Carson River—Carson City, Lyon
81	Carson Sink—Churchill
82	Castle Peak—Storey, Washoe
83	Cave Creek—Elko
84	Cave Valley—Lincoln
85	Chalk Hills—Storey
86	Chalk Mountain—Churchill
87	Charleston—Clark
88	Charleston—Elko
89	Chase—White Pine
90	Cherry Creek—White Pine
91	Chief—Lincoln
92	Churchill—Lyon
93	Clark—Storey
94	Clarkdale—Nye

District—County	
95	Cleve Creek—White Pine
96	Clifford—Nye
97	Cloverdale—Nye
98	Coal Mine—Elko
99	Coaldale—Esmeralda
100	Columbus Marsh—Esmeralda
101	Comet—Lincoln
102	Como—Lyon
103	Comstock—Storey
104	Contact—Elko
105	Cooper—White Pine
106	Copper Kettle—Churchill
107	Copper Valley—Pershing, Churchill
108	Cornucopia—Elko
109	Corral Canyon—Churchill
110	Corral Creek—Elko
111	Cortez—Eureka, Lander
112	Cottonwood—Washoe
113	Crescent—Clark
114	Crow Springs—Esmeralda
115	Cuprite—Esmeralda
116	Currant—Nye, White Pine
117	Danville—Nye
118	Decoy—Elko
119	Deephole—Washoe
120	Delamar—Lincoln
121	Delano—Elko
122	Delaware—Carson City, Douglas
123	Delker—Elko
124	Desert—Churchill
125	Desert Mountains—Lyon
126	Diamond—Eureka
127	Diamond Marsh—Eureka
128	Diamondfield—Esmeralda, Nye
129	Dike—Clark
130	Disaster—Humboldt
131	Divide—Elko
132	Divide—Esmeralda
133	Dixie Marsh—Churchill
134	Dixie Valley—Churchill
135	Dobbin Summit—Nye
136	Dogskin Mountain—Washoe
137	Dolly Varden—Elko
138	Don Dale—Lincoln
139	Donnelly—Humboldt
140	Double Springs Marsh—Mineral
141	Duck Creek—White Pine
142	Dutch Flat—Humboldt
143	Dyer—Esmeralda
144	Dyke—Humboldt
145	Eagle—White Pine
146	Eagle Valley—Lincoln
147	Eagleville—Mineral
148	East Pahrangat Range—Lincoln
149	Eastgate—Churchill
150	Eastside—Mineral
151	Eden—Nye
152	Edgemont—Elko
153	Eldorado—Carson City, Lyon
154	Eldorado—Clark
155	Elk Mountain—Elko
156	Elko—Elko
157	Ellendale—Nye
158	Ellison—White Pine
159	Ellsworth—Nye
160	Ely Springs—Lincoln
161	Eureka—Eureka
162	Fairplay—Nye, Mineral
163	Fairview—Churchill
164	Farrell—Pershing
165	Ferber—Elko
166	Ferguson Spring—Elko
167	Fish Creek—Eureka
168	Fish Lake Marsh—Esmeralda
169	Fish Lake Valley—Esmeralda
170	Fitting—Mineral
171	Forty-Nine Range—Washoe
172	Freds Mountain—Washoe
173	Freiberg—Lincoln
174	Gabbs—Nye
175	Galena—Washoe
176	Gardnerville—Douglas
177	Garfield—Mineral
178	Gass Peak—Clark
179	Genoa—Douglas
180	Gerlach—Pershing, Washoe
181	Geyser—White Pine, Lincoln
182	Gibellini—Eureka, Nye
183	Gilbert—Esmeralda
184	Gilbert Canyon—Elko
185	Golconda—Humboldt
186	Gold Basin—Churchill
187	Gold Basin—Elko
188	Gold Basin—Lander

District—County	
189	Gold Butte—Clark
190	Gold Butte—Pershing
191	Gold Canyon—White Pine
192	Gold Circle—Elko
193	Gold Crater—Nye
194	Gold Point—Esmeralda
195	Gold Run—Humboldt
196	Goldbanks—Pershing
197	Golden Arrow—Nye
198	Golden Gate Range—Lincoln
199	Goldfield—Esmeralda, Nye
200	Good Hope—Elko
201	Good Hope—Esmeralda
202	Goodsprings—Clark
203	Goose Creek—Elko
204	Gourd Springs—Lincoln
205	Granite—White Pine
206	Green Valley—Douglas
207	Groom—Lincoln
208	Hallock—Elko
209	Hannapah—Nye
210	Harmony—Humboldt
211	Harrison Pass—Elko
212	Haystack—Pershing
213	Hicks—Elko
214	Highland—Lincoln
215	Hilltop—Lander
216	Holy Cross—Churchill, Mineral
217	Hooker—Pershing
218	Hunter—White Pine
219	Huntington Creek—Elko
220	Huntington Creek—Eureka, White Pine
221	Huntoon—Mineral
222	I.X.L.—Churchill
223	Illipah—White Pine
224	Imlay—Pershing
225	Independence Mountains—Elko
226	Indian—Pershing
227	Iowa Canyon—Lander
228	Iron Hat—Pershing
229	Iron Point—Humboldt
230	Island Mountain—Elko
231	Ivanhoe Elko
232	Izenhood—Lander
233	Jackson—Nye, Lander
234	Jackson Mountains—Humboldt
235	Jarbridge—Elko
236	Jefferson Canyon—Nye
237	Jersey—Pershing, Lander
238	Jessup—Churchill
239	Jett—Nye
240	Job Peak—Churchill
241	Johnnie—Nye
242	Jumbo—Washoe
243	Jungo—Humboldt
244	Juniper Range—Pershing, Churchill
245	Kawich—Nye
246	Kennedy—Pershing
247	King—Mineral
248	Kingston—Lander
249	Kinsley—Elko, White Pine
250	Klondyke—Esmeralda
251	Lafayette—Elko
252	Lake—Churchill
253	Lake Range—Washoe
254	Larrabee—Elko, Eureka
255	Las Vegas—Clark
256	Leadville—Washoe
258	Lee—Elko
257	Lee—Nye
259	Leete—Churchill, Lyon
260	Leonard—Mineral
261	Leonard Creek—Humboldt
262	Lewis—Lander
263	Lexington—White Pine
264	Lida—Esmeralda
265	Lime Mountain—Elko
266	Lincoln—White Pine
267	Little Mountain—Lincoln
268	Little Valley—Washoe
269	Lodi—Nye
270	Lone Mountain—Esmeralda
271	Lone Mountain—Eureka
272	Lone Pine—Washoe
273	Longstreet—Nye
274	Loray—Elko
275	Lucin—Elko
276	Lucky Boy—Mineral
277	Lynn—Eureka
278	Maggie Creek—Eureka
279	Manhattan—Nye
280	Marble Canyon—White Pine
281	Marietta—Mineral
282	Masonic—Mineral

KEY TO NUMBERS ON PLATE 1 (continued).

District—County	
283	McClanahan—Clark
284	McClellan—Washoe
285	McCoy—Lander
286	Meadow Valley Mountains—Lincoln
287	Mellan Mountain—Nye
288	Mercury Mountain—Nye
289	Merrimac—Elko
290	Mill City—Pershing, Humboldt
291	Millett—Nye
292	Mine Mountain—Nye
293	Mineral Basin—Pershing, Churchill
294	Mineral Hill—Eureka
295	Moapa—Clark
296	Modarelli-Frenchie Creek—Eureka
297	Montello—Elko
298	Montezuma—Esmeralda
299	Moor—Elko
300	Moore Creek—Nye
301	Morey—Nye
302	Mormon Mountains—Lincoln
303	Mound House—Lyon
304	Mount Grant—Mineral
305	Mount Hope—Eureka
306	Mount Moriah—White Pine
307	Mount Siegel—Douglas
308	Mount Tobin—Pershing
309	Mountain City—Elko
310	Mountain House—Douglas
311	Mountain Springs—Lander
312	Mountain View—Mineral
313	Mountain Wells—Churchill
314	Mud Springs—Elko
315	Muddy Mountains—Clark
316	Muncy Creek—White Pine
317	Muttlebury—Pershing
318	National—Humboldt
319	Nevada—White Pine
320	New Pass—Lander, Churchill
321	Newark—White Pine
322	Newberry—Clark
323	Nightingale—Pershing, Washoe
324	North Battle Mountain—Lander
325	Northumberland—Nye
326	Oak Spring—Nye
327	Olinghouse—Washoe
328	Opalite—Humboldt
329	Osceola—White Pine
330	Pahrnagat—Lincoln
331	Palmetto—Esmeralda
332	Pamlico—Mineral
333	Panaca—Lincoln
334	Pancake—White Pine
335	Papoose—Lincoln
336	Paradise Peak—Nye
337	Paradise Valley—Humboldt
338	Patterson—Lincoln
339	Peavine—Washoe
340	Pennsylvania—Lincoln
341	Pequop—Elko
342	Piermont—White Pine
343	Pilot Mountains—Mineral
344	Pilot Peak—Elko
345	Pine Valley—Eureka
346	Pinto—White Pine, Eureka
347	Pioche—Lincoln
348	Placerites—Pershing
349	Poinsettia—Mineral, Nye
350	Portuguese Mountain—Nye
351	Potosi—Humboldt
352	Poverty Peak—Humboldt
353	Proctor—Elko
354	Pueblo—Humboldt
355	Pyramid—Washoe
356	Queen City—Nye
357	Quinn Canyon—Nye, Lincoln
358	Rabbit Hole—Pershing
359	Ragged Top—Pershing
360	Railroad—Elko
361	Railroad Springs—Esmeralda
362	Ramsey—Lyon, Storey
363	Rand—Mineral
364	Ravenswood—Lander
365	Rawhide—Mineral
366	Rebel Creek—Humboldt
367	Red Butte—Humboldt
368	Red Canyon—Douglas, Lyon
369	Red Mountain—Esmeralda
370	Red Mountain—Lyon, Storey
371	Red Ridge—Mineral
372	Reese River—Lander
373	Republic—Nye
374	Reveille—Nye
375	Rhodes Marsh—Mineral
376	Risue Canyon—Douglas

District—County	
377	Roberts—Eureka
378	Robinson—White Pine
379	Robinson Mountain—Elko
380	Rochester—Pershing
381	Rock Creek—Elko
382	Rock Hill—Esmeralda
383	Rose Creek—Pershing, Humboldt
384	Rosebud—Pershing
385	Round Mountain—Nye
386	Royston—Nye, Esmeralda
387	Ruby Hill—White Pine
388	Ruby Valley—Elko
389	Rye Patch—Nye
390	Rye Patch—Pershing
391	Sacramento—Pershing
392	Sacramento—White Pine
393	Safford—Eureka
394	St. Thomas—Clark
395	San Antone—Nye
396	San Emidio—Washoe
397	San Francisco—White Pine
398	San Jacinto—Pershing
399	Sand Pass—Washoe
400	Sand Springs—Churchill
401	Sand Springs Marsh—Churchill
402	Santa Fe—Mineral
403	Sawtooth—Humboldt, Pershing
404	Schellbourne—White Pine
405	Scossa—Pershing
406	Scraper Springs—Elko
407	Seaman Range—Lincoln, Nye
408	Searchlight—Clark
409	Segura Ranch—Nye
410	Seigel—White Pine
411	Seven Troughs—Pershing
412	Shady Run—Churchill
413	Sharp—Nye
414	Sheephead—Washoe
415	Sherman—Humboldt
416	Shon—Humboldt
417	Shoshone—White Pine
418	Sierra—Pershing
419	Silver Canyon—White Pine
420	Silver City—Lyon
421	Silver King—Lincoln
422	Silver Peak—Esmeralda
423	Silver Peak Marsh—Esmeralda
424	Silver Star—Mineral
425	Silverbow—Nye
426	Silverhorn—Lincoln
427	Silverton—Nye
428	Skookum—Lander
429	Slate—Clark
430	Sloan—Clark
431	Snake—White Pine
432	Snake Mountains—Elko
433	Snowstorm Mountains—Elko
434	Soda Lake—Churchill
435	Sodaville—Mineral
436	South Pahroc Range—Lincoln
437	Southeastern—Lincoln
438	Spalding Marsh—Nye
439	Spencer Hot Springs—Lander
441	Spring Valley—Pershing
440	Spring Valley—White Pine
442	Spruce Mountain—Elko
443	Staggs—Pershing
444	Star—Pershing
445	State Line—Washoe
446	Stateline Peak—Washoe
447	Steamboat Springs—Washoe
448	Steiner Canyon—Lander
449	Stonewall—Nye
450	Sulphide—Mineral
451	Sulphur Humboldt
452	Sunset—Clark
453	Sutor—Clark
454	Swales Mountain—Elko
455	Sylvania—Esmeralda
456	Table Mountain—Pershing, Churchill
457	Talapoosa—Lyon
458	Taylor—White Pine
459	Tecoma—Elko
460	Teels Marsh—Mineral
461	Telegraph—White Pine
462	Tem Piute—Lincoln
463	Ten Mile—Humboldt
464	Tobin and Sonoma Range—Pershing
465	Tokop—Esmeralda
466	Tolicha Nye
467	Tonopah—Nye, Esmeralda
468	Toy—Churchill, Pershing
469	Transvaal—Nye
470	Trego—Pershing

District—County	
471	Trident Peak—Humboldt
472	Trinity—Pershing
473	Troy—Nye
474	Truckee—Churchill
475	Tule Canyon—Esmeralda
476	Tungsten—White Pine
477	Tungsten Mountain—Churchill
478	Tuscarora—Elko
479	Twin River—Nye
480	Tybo—Nye
481	Union—Eureka, Elko
482	Union—Nye
483	Valley View—Elko
484	Varyville—Humboldt
485	Velvet—Pershing
486	Vicksburg—Humboldt
487	Vigo—Lincoln
488	Viola—Lincoln
489	Virgin Valley—Humboldt
490	Voltaire—Carson City
491	Wabaska Marsh—Lyon
492	Wagner—Nye
493	Wahmonie—Nye
494	Ward—White Pine
495	Warm Creek—Elko
497	Warm Springs—Lander
496	Warm Springs—White Pine
498	Washiki—Pershing, Humboldt
499	Washington—Lyon, Mineral
500	Washington—Nye, Lander
501	Wedekind—Washoe
502	Weepah—Esmeralda
503	Wellington—Lyon, Douglas
504	Wellington—Nye
505	Wells—Elko
506	Wendover—Elko
507	Westgate—Churchill
508	Whisky Flat—Mineral
509	White Cloud—Churchill
510	White Cloud—White Pine
511	White Horse—Elko
512	White Pine—White Pine
513	White Plains Flat—Churchill
514	White Rock Springs—Nye
515	Wild Horse—Churchill, Lander
516	Wild Horse—Pershing
517	Willard—Pershing
518	Willow Creek—Nye
519	Willow Creek—Pershing
520	Wilson—Lyon
521	Wilson Creek Range—Lincoln
522	Wilsons—Nye
523	Windypah—Esmeralda
524	Winnemucca—Humboldt
525	Wonder—Churchill
526	Yerington—Lyon

Oil Field—County	
1	Blackburn—Eureka
2	North Willow Creek—Eureka
3	Railroad Valley fields (Eagle Springs, Trap Spring, Grant Canyon, Bacon Flat, Kate Spring, and Duckwater Creek)—Nye
4	Three Bar—Eureka
5	Tomera Ranch—Eureka

Geothermal Power Plant—County	
1	Beowawe—Lander
2	Brady's Hot Spring—Churchill
3	Desert Peak—Churchill
4	Dixie Valley—Churchill
5	Empire—Washoe
6	Soda Lake—Churchill
7	Steamboat Springs—Washoe
8	Stillwater—Churchill
9	Wabaska Lyon
10	Yankee Caithness—Washoe

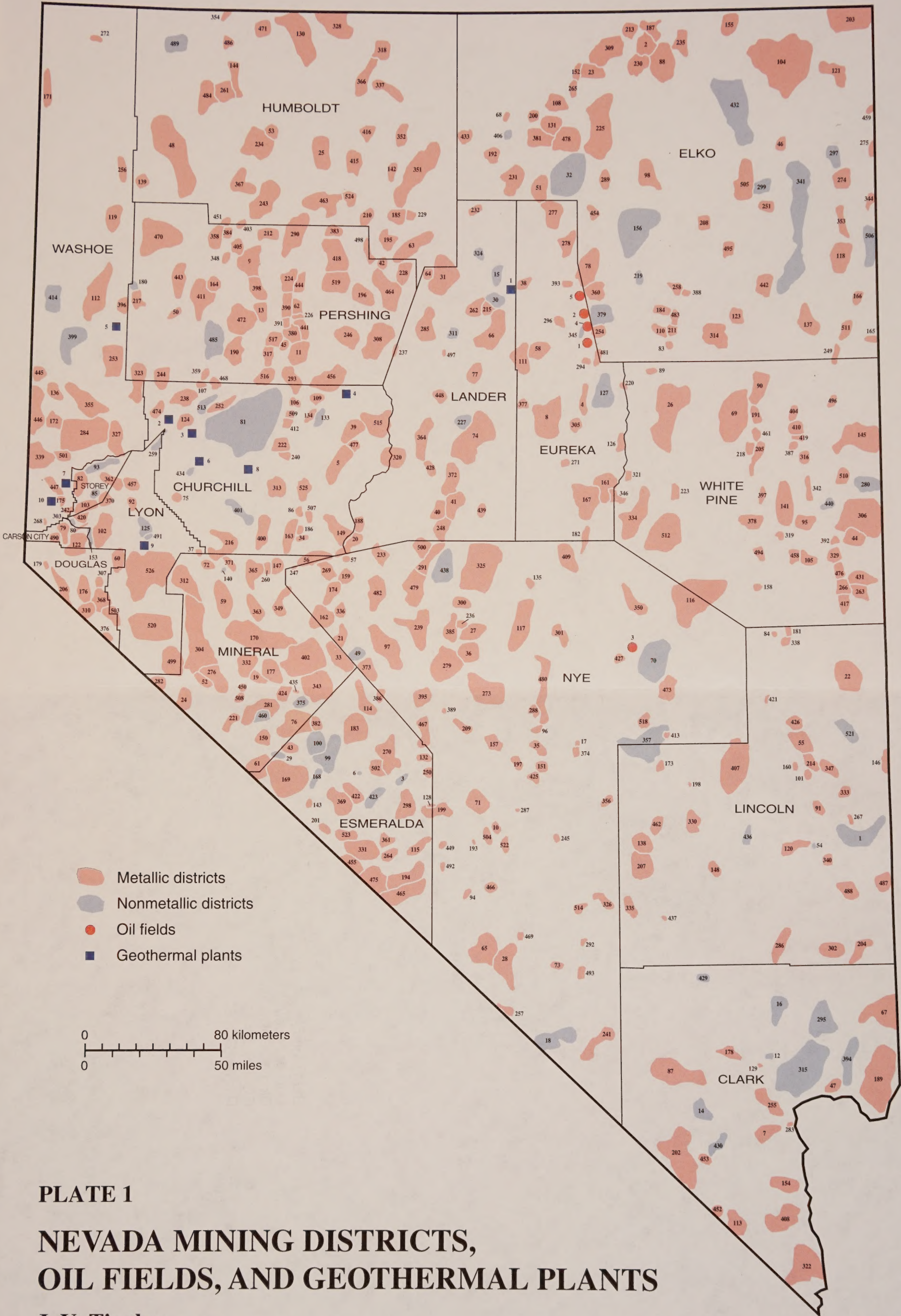


PLATE 1
NEVADA MINING DISTRICTS,
OIL FIELDS, AND GEOTHERMAL PLANTS

J. V. Tingley

More detailed information on the metallic and nonmetallic districts of Nevada is available in *Mining Districts of Nevada* by Tingley (1992).

